

# THE MONGOOSES OF BRITISH INDIA, INCLUDING CEYLON AND BURMA.

BY

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(With 2 text-figures).

## INTRODUCTION.

Blanford assigned the Mongooses of these countries to eight distinct species. Wroughton, however, in his revision increased the number to nine. He followed Thomas in uniting *fulvescens* (= *flavidens*) with *fuscus*, giving it subspecific rank, but he resuscitated *nepalensis*, which Blanford quite correctly regarded as a synonym of *auropunctatus*, and he gave a new name, *lanka*, to the Ceylonese form of the so called common Indian Mongoose, although Blanford, again correctly, regarded the two as referable to the same species. Thomas and Wroughton, however, with the splendid material of Mongooses collected by the Mammal Survey in their hands were mainly interested in the local races, or subspecies, into which most of the genuine species proved to be divisible. In conjunction with Miss Ryley, they introduced a considerable number of new names for these minor subdivisions; but too little attention, if any, was paid to the frequently well marked variations in the coat and colour according to season, with the result that some of the alleged subspecies were based upon characters due to this phenomenon. In the two most recent works upon the Mongooses of these countries of the Oriental Region, namely Mr. W. W. A. Phillips's *Manual of the Mammals of Ceylon* and Mr. S. H. Prater's account in Part IV of 'The Wild Animals of the Indian Empire' [*J.B.N.H.S.*, xxxviii, Pt. II, pp. 149-55 (1936)], the authors very naturally adopted Thomas's and Wroughton's opinions.

The following account of these eastern Mongooses is based upon an examination of all the skins and skulls in the British Museum, including the valuable series, with full particulars regarding date, locality and sex, collected by the Survey. The net result is the admission of only six distinguishable species of Mongooses (*Herpestes*) and a reduction in the number of subspecies into which some of them are divisible. There are also a few changes in nomenclature. The reasons for these and for my dissent from some of the conclusions of my predecessors are fully given under their appropriate headings. As in other papers on British Indian Carnivora published in this *Journal* I have purposely put on record a large number of details connected with individual specimens obtained by the collectors who worked for the Mammal Survey of India. The vast number of specimens that was secured leaves the impression that Mongooses of one kind or another are the dominant Carnivores of British India. But the original home of the family was probably Africa where it is represented by several well defined

genera, including *Herpestes*, which is also found in Spain. Generic names were introduced, principally by Gray, for most of the Indian species; but it seems preferable to retain them provisionally in *Herpestes*. These generic names are mentioned under their appropriate headings. Their typical species were selected by Thomas [*Proc. Zool. Soc.* (1882), p. 63].

*Key to the British Indian Species based on external characters.*

- A. A conspicuous stripe on the side of the neck; tail about two-thirds the length of the head and body.
1. Neck-stripe black, extending from behind the ear and composed of soft underhair; hind foot naked to heel; tail-tip black; chin and forethroat dark; contour hairs typically extensively red at tip ... *vitticollis*.
  2. Neck-stripe white, extending from corner of mouth and composed of coarse contour hairs; hind foot hairy below nearly down to the hallux; end of tail pale; chin and forethroat white; contour hairs whitish at tip ... .. *urva*.
- B. No stripe on side of neck.
1. Size larger; contour hairs long, many banded, usually coarse; legs darker than body.
    - a. Tail about two-thirds the length of the head and body; about half the sole of the hind foot hairy in its upper part; contour hairs softer ... *fuscus*.
    - b. Tail longer, at most a little shorter than the head and body, sometimes longer; hind foot usually naked to the heel, at most a comparatively small area hairy in the upper part in winter.
      - ¶ Tail tip from whitish to reddish ochreous ... *edwardsii*.
      - ¶¶ Tail tip extensively black ... .. *smithii*.
  2. Size smaller; contour hairs short, with a few bands, soft, sometimes silky; legs not appreciably darker than body ... .. *javanicus*.

*Key to the Species based on skull characters.*

- A. Anterior chamber of bulla reduced, posterior large, subconical and prominently projecting inferiorly; first upper molar ( $m^1$ ) with distinct cingulum; teeth generally more robust, less trenchant ... .. *vitticollis*.
- B. Anterior chamber of bulla larger, posterior rounder, not so prominent inferiorly; no cingulum on  $m^1$ ; teeth more trenchant.
1. Skull large and heavy and, as in *vitticollis*, with the sagittal and occipital crests weak so that the posterior portion of the upper surface is down-curved and the dorsal profile is never subhorizontal behind the orbits, sometimes evenly, though lightly convex ... .. *urva*.
  2. Skull smaller, much less robust, actually and relatively narrower, the dorsal profile behind the orbits subhorizontal, generally slightly sinuous, the occipital and sagittal crests being well developed behind.
    - a. Posterior chamber of bulla larger than anterior and projecting to a lower level; skull larger.

- ¶ Frontal region not noticeably elevated, the postorbital dorsal area not depressed, the upper surface of the muzzle less steeply sloped ... .. *fuscus*.
- ¶¶ Frontal region elevated, area behind it typically depressed, upper surface of muzzle more steeply sloped ... .. *edwardsii* and *smithii*.
- b. Chambers of the bulla approximately equal and projecting to about the same level; skull smaller ... .. *javanicus*.

**Herpestes edwardsii**, Geoffroy.

For the bibliography and synonymy of this species see below, especially under the subspecific headings.

*Distribution*: N. India from Assam to the North-Western Frontier Provinces, thence westwards into Afghanistan, Baluchistan and Persia and southwards to Cape Comorin and Ceylon.

A medium-sized or tolerably large Mongoose with no stripe on the side of the neck; the tail long, at most a little shorter than the head and body, sometimes a little longer, with the hairs at its tip pallid to ochreous red, never black; the legs darker than the body; the contour hairs of the back harsh and long or longish and marked with many, generally about ten dark and light bands alternately arranged giving a speckled aspect to the pelage; the sole of the hind foot generally naked to the heel but in some cases at least the heel is covered with hair in winter.

The general colour is very variable, sometimes individually in the same locality and at the same time of year, frequently also seasonally and also racially, the variation depending on the tint of the bands in the contour hairs, the dark bands being either black or brown or even paler, when faded, both these tints being sometimes replaced by red to a varying extent; the pale bands also vary from white to buffy white; the colour is also affected by the extent of the individual bands, being lighter when the pale bands are wider than the dark and darker when they are narrower, and since the number of bands is the same whether the hairs are long or short and increase in length with their growth, specimens in the short-haired, new coat are more finely speckled than those in the long-haired, fully developed coat which is coarsely speckled; the fur or underwool which is always present but scanty or abundant according to the season or district also varies in tint from very dark olive grey, often yellowish or red, to nearly white especially when seasonally faded.

These features of the pelage apply to some other species as well as to *edwardsii*.

The skull of the adult has the forehead more or less swollen so that the summit of the muzzle is somewhat steeply sloped, the dorsal area behind the orbits is depressed and rises posteriorly towards the occiput where the sagittal and occipital crests are strongly developed, the dorsal profile being horizontal with a sinuous curvature; the posterior chamber of the bulla is roundish, larger than the anterior and projecting to a lower level.

Much confusion is connected with the name of this Mongoose. It was cited as *Herpestes mungo* by Blanford and later as *Mungos mungo* by Wroughton. But J. A. Allen (*Bull. Amer. Mus. Nat. Hist.* 47, p. 161, 1924) showed that *Mungos mungo* Gmelin is the correct title for a generically distinct African Mongoose and adopted *nyula* as the name of the common Indian species. Thomas and Wroughton, however, accepting Allen's determination of *Mungos mungo*, chose for the Indian species the name *Herpestes edwardsii* Geoffroy based upon the description and figure by G. Edwards of a living specimen of the Indian Mongoose he saw in London. Thomas's decision on this point should, I think, be accepted. He, however, assigned the name *edwardsii* to the Mongoose from Bengal, which Wroughton regarded as typical *Mungos mungo*. But Edwards's figure and description do not agree with any Bengal skins I have seen. They indicate a much darker animal, agreeing better with the South Indian Mongoose Wroughton named *elliotti*, for which Thomas substituted *carnaticus*, than with any other Indian race; and since Edwards's specimen

is quite as likely to have been exported from Madras as from Bengal, I propose to fix *edwardsii* on that race with *elliotti* and *carnaticus* as synonyms. This leaves the name *nyula* Hodgson available for the Bengal form.

Another name, not uncommonly applied in the past to this Mongoose and recently resuscitated for it by Bechthold (*Zeitschr. Saug.*, xi, p. 149, 1936), is *griseus* Geoffroy (*Descr. de l'Egypte*, ii, p. 139, 1812) proposed for a specimen described and figured by Buffon (*Hist. Nat.*, iii, p. 174, *Suppl.*, pl. 27, 1776) as 'Le Nems' and said to have been sent to him from the interior of Africa. Buffon's description agrees with the common Indian Mongoose and, presumably for that reason, Geoffroy cited the East Indies as the locality for his *Ichneumon griseus*. There seems to be no other justification for Geoffroy's alteration of Buffon's record more than thirty years later. But *griseus* is in any case inadmissible for the species, whatever it be, because it was pre-occupied twenty years earlier by *nems* Kerr [*Anim. King*, p. 160 (1792)] based on the same Mongoose mentioned in Smellie's translation of Buffon, vii, p. 221 (1791), where the eastern parts of Africa are cited as its locality. On the available evidence *nems*, and its synonym *griseus*, cannot be applied to this Indian species.

The subspecies into which this species have been divided are by no means always easy to define or determine. Not only do they completely intergrade, but specimens from the centre of the geographical area of one race may be indistinguishable from specimens from the geographical area of another. Nevertheless I have seen no skins in Northern India like those of Travancore or Ceylon nor skins of the Ceylonese style in North India.

On the average they may be distinguished as follows:—

- A. Winter coat with the contour hairs longer and more coarsely speckled, the pale speckling more in evidence, with the general hue lighter, red on head, etc. more prevalent.
1. General colour a trifle darker with less tendency to erythrisms (North and North Central India) ... *nyula*.
  2. General colour a trifle lighter, erythrisms more prevalent (Valley of the Indus, N.-W. deserts, Baluchistan) ... .. *ferrugineus*.
- B. Winter coat shorter, more finely speckled, pale speckling not dominant over dark, general hue darker with red everywhere less in evidence, sometimes absent.
1. Speckling on the average coarser (S. India) ... *edwardsii*.
  2. Speckling on the average finer (Ceylon) ... .. *lanka*.

#### *Herpestes edwardsii nyula*, Hodgs.

*Mungusta (Herpestes) nyula*, Hodgson, *Journ., As. Soc. Beng.*, v, p. 236 (1836).

*Mungos mungo mungo*, Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxiv, p. 52 (1915). (Not of Gmelin).<sup>1</sup>

*Herpestes edwardsii edwardsii*, Thomas and Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxvii, p. 547 (1921).

*Mungos mungo moerens*, Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxiv, p. 52 (1915).

*Locality of the type of nyula*, Nepal; of *moerens*, Nimar.

*Distribution*: Northern India from Nepal to Assam north of the Ganges and from Cutch to Bengal south of the river.

Winter coat composed of long, rather harsh contour hairs, and up to 50 mm. or more in length, and plenty of wool, the general speckling of the

<sup>1</sup> Wroughton's very inadequate diagnosis of this race as having the underfur comparatively very sparse and the hairs on the lower back 40 mm. long was evidently based upon a specimen or specimens from Bengal in summer coat. He could not have examined Hodgson's skins of *nyula*, regarded by him as a synonym of *mungo*. At least one of them has plentiful underwool and the rump hairs about 50 mm.



body and tail coarse; colour very variable seasonally, the shorter new coat prevalently silvery, with contrasted black and white speckling, the black fading to brown and the white soiled in the older coat, but even in the new coat the speckling may be brown and buffy or yellowish; hairs of the underside with dark speckling or fading to uniformly pale; typically some red on the muzzle, cheeks and ears; sometimes a little on the crown and nape; the wool varying from dark olivaceous grey to soiled white; the legs dark or rufous brown and grizzled.

The following notes show the individual variations in different districts.

Nepal. Hodgson recorded *nyula* as the common Mongoose of the Nepalese lowlands and North Behar, but his description of the type does not fit any of the six undated skins he sent home. The colour was 'mixed rich, red brown and hoary yellow', the long harsh hairs having from 10 to 12 rings of alternate brown and yellow, the ears, face, and limbs being redder and the underside pale yellow. This was apparently an aberrant reddish specimen indistinguishable from some specimens of the following race, *ferrugineus*. One of his skins in the British Museum (No. 43.1.12.17) may be the type, but the dark speckling is only brown, pale drabby, with the head and nape rather brighter. His series varies as follows:—The contour hairs on the rump range from about 40 to 50 mm. and the wool is copious or very scanty. The dark speckling varies from blackish and blackish brown to darker or paler brown, the pale from silvery to dull grey or drab and the wool from yellowish olive to pale drab or soiled whitish. The lower side is drabby or greyish, sometimes indistinctly dark speckled; the head has some red at least on the muzzle, cheeks and ears, sometimes on the crown and nape as well; the tail is like the body, with the tip, when present, soiled whitish; the legs are dark brown or rufous brown and grizzled, one skin showing abundance of rusty red above the hocks.

The colour of these skins of Hodgson's has probably deteriorated with age; but the following from places to the east of Nepal and north of the Ganges are not racially separable from them.

Darbhangha, 150 ft. Several skins from Bahgownie (*Crump*), July 25 to October 10, show interesting individual variations. The coat is from about 30 to 40 mm. according to the earlier or later date, the wool being similarly negligible in amount or fairly plentiful; the speckling is contrasted black and white in the new short coat, duller and less contrasted in the older longer coat; the wool varies from olivaceous to yellowish and frequently shows through the contour hairs, affecting the coloration of the dorsal surface.

Haldibari, S. of Sikkim, 150 to 200 ft., April 13 to 20. One specimen is a trifle more silvery than the palest Nepal skin. Another is intermediate between the palest and the brownest Nepal skins. The wool in both is pale grey.

Jalpaiguri, N. of Kuch Behar, April 18. A skin resembling the second from Haldibari in having pale brown speckling.

Goalpara in Assam, S. of the Brahmaputra, August. A ♀ with the coat 34 mm., the colour finely speckled with black, brown and white and the wool olive grey exactly matches one of the Darbhangha skins dated August 25.

In two districts to the west of Nepal and north of the Ganges, namely from Kumaon, 1,100 to 2,500 ft., November and December, and from Pilibhit in Rohilkund, 800 ft., March, several specimens were collected and are very much alike, the general colour being speckled black and white, as in the first described specimen from Haldibari; the wool is pale buffish white in the Kumaon skins but whiter in those from Rohilkund. These skins were identified by Wroughton as *pallens* (see below p. 217) and quite correctly according to his erroneous conception of his *mungo*, i.e. *nyula*.

From two localities south of the Ganges in Western Bengal, namely Hazaribagh, 600 to 1,800 ft., April 18 to June 26 and from Daltonganj, 600 ft., March 24 to April 1, *Crump* sent several skins which call for no special comment, except that one from Daltonganj has a good deal of red on the head and some on the nape as in the brownest of the Nepal skins.

Gwalior. A good series of skins from several localities and dated from June to the end of November exhibits great variation in colour although not the ferruginous phase, there being at most a little red on the muzzle. In the late autumn coat (October and November) the contour hairs, about 55 mm., are speckled black or blackish and clear white, those of the underside being

ticked with black; the feet are dark with hardly any brown tinge and the tail-tip is ochreous or flavous. In the summer coat, June and July, the contour hairs of the dorsal side are faded, speckled very pale brown and soiled white, there is no dark speckling below and the legs are much paler and browner; the underwool bleaches from dark olive grey to dirty whitish.

Most of the skins Wroughton assigned to *moerens* are in fresh undated coat, with the black and white speckling sharply contrasted, and resemble the darker of the skins from Darbhanga (August) and Gwalior (October).

Cutch, 200 to 500 ft., July 10 to August 15. Nine skins in new short coat are mostly speckled black and white, one being browner in hue, the wool is scanty and varies from smoke grey to greyish ochreous, the legs from dark to reddish brown speckled with grey; the head has a little red.

Kathiawar, 200 to 2,500 ft., October 6 to December 1. Eleven skins have the coat fuller and longer in accordance with the later season, but are generally similar to the Cutch series, varying to a certain extent in the clearness of the white speckling, in the wool which is darker or lighter olivaceous grey and in the amount of red on the head and limbs.

Nimar. Two skins, including the type of *moerens* from Ganoor, 1,000 ft., December 22 and 23, resemble the Kathiawar lot but have the wool ashy grey, the type itself having some red on the nape. One from Asigarh, 1,500 ft., November 3, has the wool much darker, olivaceous.

Berar, Ellichpar, 1,500 ft., May 17, a ♂ closely resembles the type from Nimar but has more reddish brown on the muzzle and legs and the wool slightly yellowish grey. Considering the date, it is surprising that this skin shows no sign of coat change.

E. Khandesh, one from Shendurni, 900 ft., March 30, is speckled black and white like the preceding and has the wool olivaceous grey, and another from Parola, 8,800 ft., March 13, has begun to bleach, the dark speckling being brown and the wool pale grey.

Hoshangabad, Sohagpur, 1,000 ft. Five skins, April 10 to 13, vary greatly in colour. One is speckled black and white, like the preceding lots, with the legs very dark brown. A second is much paler with broader white bands, some red on the back and the wool whitish. A third has the dark speckling faded mostly to pale brown and not strongly contrasted, the hind feet rufous, the wool drabby and the belly hairs not speckled as they are in the first. The contour hairs on the rump vary from about 30 to nearly 50 mm. This series showing seasonal change in colour connects typical *moerens* with the Nepalese series.

FLESH MEASUREMENTS AND WEIGHTS OF SOME SPECIMENS OF *nyula*.

—	Head and Body	Tail	Hind-foot	Weight lbs.
Cooch Behar, Haldibari. ad. ♂	15 $\frac{3}{8}$	14 $\frac{2}{8}$	3	2 $\frac{3}{4}$
Darbhanga ... ad. ♂	15 $\frac{3}{8}$	14 $\frac{1}{8}$	3—	...
Daltonganj ... ad. ♂	16 $\frac{2}{8}$	15 $\frac{5}{8}$	3 $\frac{1}{8}$	...
Kumaon, Ramnagar ... ad. ♂	17	16	3 $\frac{1}{8}$	3 $\frac{1}{2}$
" " " " ... ad. ♂	16 $\frac{3}{8}$	14 $\frac{1}{8}$	3 $\frac{1}{8}$	4
Rohilkund, Pilibhit ... ad. ♂	16	14 $\frac{1}{8}$	3	3
Gwalior, Guna ... ad. ♂	17 $\frac{2}{8}$	15 $\frac{3}{8}$	3 $\frac{1}{8}$	...
" " " " Ghatigaon ... ad. ♂	17	14 $\frac{1}{8}$	3+	3 $\frac{3}{4}$
Hoshangabad ... ad. ♂	17 $\frac{1}{8}$	15 $\frac{3}{8}$	3+	3 $\frac{1}{4}$
Kathiawar ... ad. ♂	16 $\frac{3}{8}$	14 $\frac{1}{8}$	3—	3 $\frac{1}{4}$
Cutch, Nokania ... ad. ♂	15 $\frac{3}{8}$	15 $\frac{1}{8}$	3+	3
Daltonganj ... ad. ♂	14 $\frac{3}{8}$	14 $\frac{3}{8}$	3—	...
Kumaon, Naini Tal ... ad. ♂	15 $\frac{1}{8}$	13 $\frac{3}{8}$	2 $\frac{3}{8}$	2
" " " " Ramnagar ... ad. ♂	15 $\frac{3}{8}$	15 $\frac{2}{8}$	2 $\frac{3}{8}$	...
Rohilkund, Pilibhit ... ad. ♂	15 $\frac{1}{8}$	13 $\frac{3}{8}$	2 $\frac{3}{8}$	2
Gwalior, Ghatigaon ... ad. ♂	15 $\frac{1}{8}$	14	2 $\frac{3}{8}$	2 $\frac{1}{4}$
Nima ( <i>moerens</i> type) ... ad. ♂	15 $\frac{3}{8}$	14 $\frac{2}{8}$	3—	2 $\frac{3}{4}$
Kathiawar ... ad. ♂	15 $\frac{3}{8}$	15 $\frac{1}{8}$	3	2 $\frac{1}{2}$
Cutch, Nokania ... ad. ♂	14 $\frac{3}{8}$	13	2 $\frac{3}{8}$	...

SKULL MEASUREMENTS OF *H. edwardsii nyula*.

LOCALITY AND SEX		Cond. Bas. Length	Zygom. Width	Post. Orb. Width	Int. Orb. Width	Max. Width	Mand. Length	$\rho m^*$	$m_1$
Nepal (Hodgson)	... ad. ♂	78	42	13	15	15	...	8 × 6	...
Darbangha	... ad. ♂	77	38	11	14	14	...	7 × 5	...
Hazaribagh	... ad. ♂	84	42	11	16	15	56	7½ × 5	7
Kumaon	... ad. ♂	82	42	14	16	15	53	7½ × 5½	7
Bahraich, U.P.	... ad. ♂	77	38	14	15	14	50	7 × 5	7
Daltonganj	... ad. ♂	82	40	13	16	15	52	8 × 5	7
Gwalior	... ad. ♂	82	44	13	16	16	...	7½ × 5	...
"	... ad. ♂	79	41	12	14	14	52	7 × 4½	6
Berars	... ad. ♂	81	45	13	15	15½	...	7½ × 6	...
Kathiawar	... ad. ♂	83	...	14	16	16	53	8 × 6	7
Cutch	... ad. ♂	80	41	12	15	15	51	8 × 6	7
"	... ad. ♂	77	42	13	16	15	50	7½ × 5½	7
Nepal (Hodgson)	... ad. ♀	71	36	12	12	12	46	7 × 5½	7½
Daltonganj	... ad. ♀	75	38	11	14	13	49	7 × 5	7
Gwalior	... ad. ♀	79	41	12	15	13	52	8 × 5	7
"	... ad. ♀	75	38	11	14	13	49	7 × 5	7
Nimar ( <i>moerens</i> type)	... ad. ♀	80	38	12	15	14	51	7 × 5	7-
Cutch	... ad. ♀	73	36½	12	13½	13	46	8 × 6	7

The specimens in this table from Nimar, Berars, Kathiawar and Cutch were referred by Wroughton to *moerens*.

Male skulls are on the average larger than female skulls, although they overlap in size.

***Herpestes edwardsii ferrugineus*, Blanf.**

*Herpestes ferrugineus*, Blanford, *Proc. Zool. Soc.* (1874), p. 661, pl. 81.

*Herpestes andersoni*, Murray, *Vent. Zool. of Sind*, p. 34 (1884).

*Mungos pallens*, Ryley, *Journ., Bomb. Nat. Hist. Soc.*, xxii, p. 660 (1914).

*Mungos ferrugineus* and *pallens*, Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxiv, pp. 51-4 (1915).

*Herpestes griseus montanus*, Bechthold, *Zeitschr. Säug.*, xi, p. 149 (1936).

*Locality of the type of ferrugineus*, Larkhana, Sind; of *andersoni*, Kotree, Sind; of *pallens*, Palanpur, N. Gujerat; of *montanus*, Hazara.

*Distribution*: Mainly the desert districts of N.-W. India in the valley of the Indus and Sutlej and to the east in Rajputana and to the west into Baluchistan and Persia.

Distinguished on the average from *nyula* by its paler, whiter colour, with less black speckling in the contour hairs, its paler wool and by a greater tendency for the replacement of the dark speckling by red or rich ochreous, the replacement being sometimes complete as in the type of *ferrugineus*, sometimes partial as in *andersoni*, whereas in the normal form of the race represented by the type of *pallens* there is no red on the body, although the red of the head and limbs is typically more pronounced and contrasted than in *nyula*.

The type of *H. ferrugineus*, Blanford, from Larkhana, Sind, was red all over, all the normal black speckling of the coat being replaced by rusty red, the tail becoming progressively redder towards the tip. Blanford at first regarded this as representing a valid species, but subsequent examination of intermediates induced him finally to regard it as a 'variety' of the common Indian Mongoose.

Murray recorded apparently similarly red specimens as *ferrugineus* from Kotree and Karachi in Sind, and at the same time described as *H. andersoni*

a partially red specimen from Kotree. This had the contour hairs of the back banded black and white, with a ferruginous apical or subapical tip, the tail hairs mostly white with extensively reddened tips; the forehead ferruginous and rather darker red than the chin, throat and the rest of the under side; the feet rufous brown with black toes; the wool ferruginous at the summit, yellowish-white at the back.

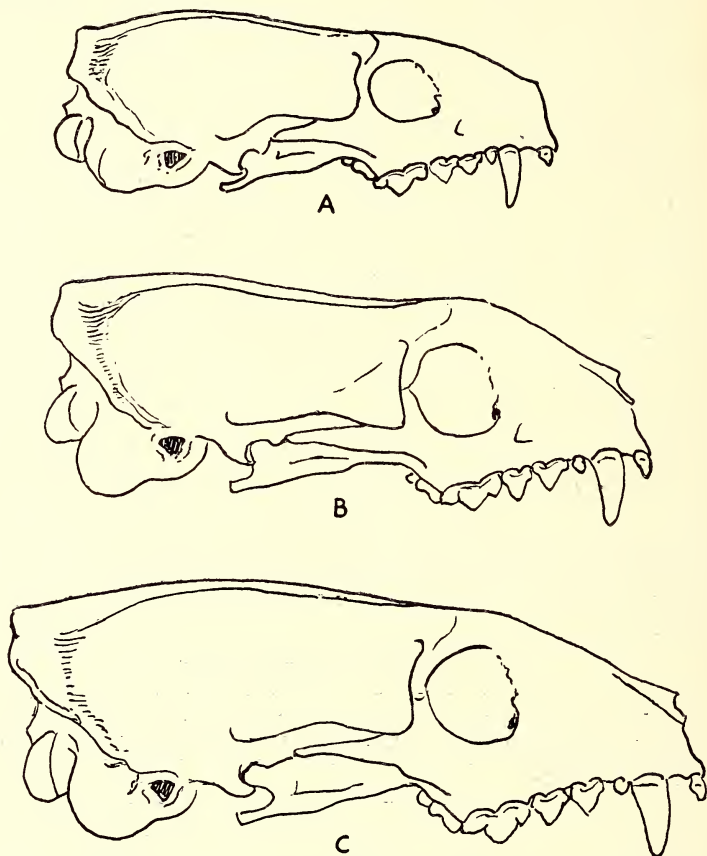


Fig. 1.—A. Skull of adult ♂ of *Herpestes javanicus pallipes* from Kandahar.  
 B. Skull of adult ♂ of *Herpestes edwardsii nyula* from Nepal.  
 C. Skull of adult ♂ of *Herpestes fuscus fuscus* from S. Coorg.

There are no specimens in the British Museum like the type of *ferrugineus* and Wroughton's diagnosis of *ferrugineus*, which he regarded as a race, was based on specimens evidently closely resembling *andersoni*, although not red below or in the wool. The occurrence of typical *ferrugineus* and of *andersoni* at Kotree suggests that they merely represent colour phases of one and the same form. Also the occurrence of specimens evidently closely resembling *andersoni* in the same locality as specimens indistinguishable from *pallens* justifies in my opinion the view that *ferrugineus* and *andersoni* are red or reddish mutants of *pallens*, the normal form. Unfortunately the name *ferrugineus*, given to a hitherto unique specimen exhibiting the extreme phase of erythrism, has to be adopted for this race, as the earliest proposed.

The following account of skins from different districts shows the range of variation in colour and other characters:—

Sind. In four skins from Khairpur (Prater), April 8 to 15, the dark speckling of the coat varies from black to very pale brown, the wool from



drab to palish grey, the tail tip from reddish ochreous to flavous, the head being dull brownish with only a little red on the muzzle. Two from Sukkur, March 16 and 27, on the contrary, have the head, nape and tail-tip reddish ochreous and a faint reddish cast over the back. These two evidently come near the type of *andersoni* in tint. Nearer still and possibly one of Murray's specimens of the latter is a skin from the Karachi Museum, labelled Sind and dated December, which has the dorsal surface speckled black and white with a reddish cast, the head, neck and tail-tip reddish ochreous, and the wool yellowish-drabby. As mentioned below one of the skins from Kangra closely matches the Sukkur skins except that the tail-tip is flavous.

An aberrant ♀ skin from Tata, west of the Indus in S. Sind (McCann), October 23, with the speckling contrasted black and white, a little red on the head but none elsewhere, the feet dark brown, grizzled, and the wool olivaceous grey, exactly matches skins from Cutch, July and August, identified by Wroughton as *moerens*.

Gujerat, Palanpur, 150 ft. (Crump). An adult ♂ (type of *pallens*), March 21, has the coat thinnish but 52 mm. long on the rump, the general colour of the back coarsely speckled white and brown, but with some black on the back, the head reddish, the tail-tip flavous, the wool greyish white, the legs reddish brown and the underside white. An adult ♀ from Danta, 100 ft., January 25, has the coat 45 mm. the general tint with blacker speckling, as if less faded in accordance with the different date; but the fore paws, the hind feet below the hock, the inside of the thighs, and the abdomen are albino.

Rajputana. Seven skins from several localities, dated January to June, differ greatly in coat and colour according to season. A ♀ from Jodhpur, February 22, the darkest of the series, has the coat 50 mm., the general colour brownish, fitting in with the Nepalese series of *nyula*, the wool plentiful, pale drab in hue with a yellowish suffusion in places, the drab matching the wool of a Nepal skin with the palest wool. Of three skins from Sambhar two are sharply contrasted, one, January 25, being speckled silver and black, a second, April 27, pale brown and soiled white, a third, March 5, intermediate between them, the wool being soiled white in all. Six from Mt. Abu, 4,300 ft., May 19 to June 5, have the coat short and harsh, the white speckling dominant, the dark from blackish to drabby brown with little, if any, light coloured wool but the head, especially the nose, and the legs, especially the hind, reddish and contrasted with the pale body; the tail-tip pallid.

Kohat, south of Peshwar, N.-W. F., 2,000-2,700 ft. A ♀, October 25, is the reddest and the most like *andersoni* of all the skins in the British Museum. The coat, 53 mm., has plenty of wool greyish and drabby at the base with a buff tinge at the summit; the head and cheeks are rusty and slightly grizzled, the neck is a little less red, but that tint is traceable in all the dorsal contour hairs where it more or less displaces their black tips; the tail is rather heavily red especially at the tip and the legs are grizzled rufous brown. A second ♀, March 9, has the coat 59 mm., the wool the same, but the head, body and tail are much paler and less red, with the white of the contour hairs more manifest; the feet, however, are the same. These two skins suggest that the difference between them is due to the gradual bleaching of the winter coat between the end of October and the beginning of March. In all probability the March skin would have lost all its red before the coat was shed. The skin from Sind (Karachi Museum), December, is nearly intermediate between the two.

Chaklala, Rawalpindi, in the Upper Punjab (Stockley). Two skins, July 6 and 13, closely resemble the skins from Mt. Abu in Rajputana, both in the condition of the coat and in colour, but one skin has some red on the nape; the scanty wool is soiled yellowish in both skins.

Hazara between Peshawar, N.-W. F., and Kashmir (not Hazara in Afghanistan). An ad. ♂ skin, undated but in full winter coat with the contour hairs about 55 mm. and abundance of underwool; the general colour is pale, the contour hairs in accordance with their length being broadly banded whitish and blackish brown with the tips from the nape to the rump and on parts of the tail slightly reddened, but the red cast hardly visible unless the coat is raised; the wool is yellowish or yellowish grey, becoming whitish on the rump; the tail tip is whitish, the legs rusty brown and grizzled, the head reddish and the under side uniformly drabby yellow. This skin, the

type of *Herpestes griseus montanus*, obviously represents the winter phase of the two summer skins from Rawalpindi. It is very like the March skin from Kohat but not so red anywhere, and is very similar to the type of *pallens* except that the bands on the tail are blacker and there is a slight reddish cast on the body.

Chamba, 3,000-3,300 ft. (Wells), January 22 to 25. Four skins collected at Changa vary considerably in colour. The coat is full, ranging from about 45 to over 50 mm. in length. A ♂ has the speckling normally coarse, black and whitish, with no red on the dark brown head except on the cheeks and ears, the wool pale greyish and the legs dark brown, speckled, with no appreciable red tinge, and the tail tip flavous. A ♀ is darker, with the pale speckling finer and buffy or yellowish in tint, the head brownish red but no red on the body, the wool dark olivaceous grey, the legs very dark with the toes nearly black and the tail-tip dark ochreous. Another ♀ has the head and nape, especially the head, rusty brown, there is a reddish wash on the back, above the hock and on the base of the tail, the tip of the latter being flavous; the fur is mostly drabby grey, the fore legs reddish brown, with hardly any pale speckling, from above the wrist, with some white hairs on the toes, the hind the same but more speckled and without trace of albinism. This specimen almost exactly matches the skin from Kohat, March 9, except that the tail-tip is flavous.

Kangra, 2,000-7,000 ft. (Wells). About 20 skins, mostly labelled Kangra, 2,000 ft., March 20 to April 2, with a few more from Dhamtal, 2,000 ft., November 11; Guggal, 4,000 ft., February 10; Gopalpur, 7,000 ft., March 9; and Sanyala, 5,000 ft., April 18. The coat is full, from about 45 to 55 mm., the general colour is on the whole tolerably uniform and grey, coarsely speckled with white and black or brownish black; the head is normally reddish and frequently there is a reddish cast on the nape, back and the root of the tail, the tip of the tail being always flavous; the wool is pale grey or drabby grey, often noticeably darker on the fore back than on the hind back and rump and the legs are brown, nearly always with a rusty tinge. Two skins differ somewhat from the average. The first is a single adult ♀ from Dhamtal, November 11, which has the wool uniformly ochreous buff all over the upper side, suggesting that the pale wool in the March skins may be faded. In the colour of its wool this Dhamtal skin seems to approach the type of *andersoni* from Kotree, Sind. The second is an adult ♂ from Sanyala, April 18, which has the dorsal coloration generally much lighter than in the others, with the head and nape, especially the head bright ochreous red and the legs ochreous and unspeckled, the toes of the fore foot being albino. This skin closely resembles examples from Sukkur in Sind and elsewhere, which fall into the *andersoni*-phase of *ferrugineus*, except that the tail-tip is flavous not ochreous. The skins with the reddish wash also approach that phase, but they differ very little from the redder of the two examples of *nyula* from Daltonganj, whereas those which have only the normal amount of red on the head and none elsewhere are practically indistinguishable from some examples assigned to *nyula*. I refer the series to *ferrugineus* because of the considerable percentage of specimens exhibiting a tendency to redness. They may, however, be considered intermediate between *nyula* and the red phase of *ferrugineus* as the skins from Kumaon and Rohilkund are intermediate between *nyula* and the pale or *pallens* phase of *ferrugineus*.

Baluchistan. Seven skins (J. E. B. Hotson) collected at various localities and dates exhibit variations similar to those of the other districts considered. One from Mand, 900 ft., December, one from Gumajgi, 500 ft., 50 miles west of Turbat, December, one from Panjgur, 3,200 ft., January, closely match the skins from Kumaon and Rohilkund. Another from Geh, on the Perso-Baluchi border, January, is also like them except that the wool is ashy grey at the base, buffy at the summit. Seasonal change is illustrated by a second skin from Panjgur, May 26, which has the coat thin and harsh, the general colour dull, the black speckling faded to pale brown, the white speckling soiled, the scanty wool drabby grey showing under the hair; and one from Jebri, 147 miles south-west of Kelat, 3,775 ft., August 31, also in poor coat, has the speckling blurred and faded and with the brownish grey wool giving a general tawny hue to the pelage. None of the above described skins shows any reddish tinge except a trifle on the head; but one from Qasrgand on the Perso-Baluchi border, 1,710 ft., December 29, is of the ferruginous

*andersoni* type closely matching the October skin from Kohat but not quite so red on the back although redder than the Sind specimen from the Karachi Museum.

The dimensions in the following table suggest that specimens from Kangra and Chamba are larger, sex for sex, in length of head and body than those from Sind, Rajputana etc. and also than those assigned to *nyula*. But they were measured by a different 'hand'; and since the tails and hind feet, in which there is less likelihood of discrepant results, are not longer, it seems wiser to suspend judgment on the point and to refrain from indicating by a new racial name the apparent difference, especially as it is unsatisfactorily supported by the size of the skulls which at most are a mere trifle longer in condylobasal length. Additional observations on the subject are given below under the notes on the skulls.

To the measurements of the British Indian specimens in this table are added those of an adult ♂ from Shiraz, Persia, collected by Sir J. E. B. Hotson. attesting general agreement with specimens from Baluchistan, Sind and Gujerat. It belongs to the *pallens* phase, showing no special erythrisism.

Only a few weights were recorded. The two ♂ specimens from Mt. Abu, Rajputana, were respectively 3 and 2¾ lbs., the ♂ from Palanpur, Gujerat, the type of *pallens*, was 3¼ and the ♀ from Danta, Gujerat 2 lbs.

FLESH MEASUREMENTS IN ENGLISH INCHES OF SOME SKINS ASSIGNED TO *ferrugineus*.

			Head and Body	Tail	Hind foot
Kangra (largest)	...	ad. ♂	21½	14	3½
„ (smallest)	...	ad. ♂	18¾	14	3—
„ Average of 9	...	ad. ♂	19¾	...	...
Chamba	...	ad. ♂	20¾	15½	2½
Rajputana, Mt. Abu	...	ad. ♂	17¾	15½	3½
„ „ „	...	ad. ♂	16	13½	3½
Gujerat ( <i>pallens</i> type)	...	ad. ♂	15½	16—	3—
Sind, Sukkur	...	ad. ♂	16¾	15¾	3½
„ Khairpur	...	ad. ♂	15¾	13¾	3—
Baluchistan, Mand	...	ad. ♂	15½	14¾	3+
Persia, Shiraz	...	ad. ♂	15¾	15¾	3
Kangra (largest)	...	ad. ♀	18¾	15½	3—
„ (smallest)	...	ad. ♀	14½	14¾	2½—
„ Average of 10	...	ad. ♀	16¾	...	...
Chamba	...	ad. ♀	16¾	14	2½
„ „ „	...	ad. ♀	15¾	15	2¾—
Kohat, N.W.F.P.	...	ad. ♀	14	14¾	2½
Sind, Sukkur	...	ad. ♀	14¾	15½	3—
„ Khairpur	...	ad. ♀	14¾	14½	2½
„ Tata	...	ad. ♀	14¾	12½	3—
Gujerat, Danta	...	ad. ♀	15	14½	2½
Baluchistan, Qasrqand	...	ad. ♀	14	14¾	2½

Comparing skull-measurements with flesh-measurements there are one or two points to be noted. The two measured ♂ skulls from Kangra, 83 and 77 mm. respectively in condylo-basal length, agree very closely with the two ♂ skulls from Mt. Abu, in S. Rajputana. But the head and body of the skin of the larger Kangra skull is indicated as over 3 in. longer than the skin of the larger Mt. Abu skull and the smaller Kangra skull, which is 2 mm. shorter than the smaller Mt. Abu skull, belongs to a skin of which the recorded head and body length is very nearly 3 in. longer than in the Mt. Abu specimen. These recorded differences cast further doubts on the trustworthiness of the head and body lengths of the Kangra specimens. Also there is by no means always correspondence in size between skulls and head



and body measurements. The skulls of the two Kangra specimens measuring  $21\frac{1}{2}$  and  $18\frac{1}{2}$  in. respectively are alike 77 mm. in condylobasal length whereas two specimens measuring respectively  $20\frac{2}{3}$  and 20 in. have skulls 83 mm. long.

The largest of the Kangra skulls marked ♀, with a length of 81 mm. has all the characters of a ♂. It has the same number as the ♀ skin measuring  $18\frac{2}{3}$  in. in head and body. But one of the ♂ skins has a ♀ skull assigned to it. Possibly they got mixed. At all events the rest of the ♀ Kangra skulls range from 76 to 72 mm. in length, the average of 8 being  $74\frac{3}{4}$  mm.

SKULL MEASUREMENTS OF *ferrugineus*.

LOCALITY AND SEX	Cond. bas. Length	Zygom. Width	Post Orb. Width	Int. Orb. Width	Max. Width	Mand. Length	$\phi m^1$	$m_1$
Kangra (largest) ... ad. ♂	83	44-13	$16\frac{1}{2}$	15	55	$8 \times 5\frac{1}{2}$	7	
,, (smallest) ... ad. ♂	77	39	11	14	49	$7 \times 5$	$6\frac{1}{2}$	
,, Average of 6 ... ad. ♂	81	...	...	...	...	...	...	
Chamba ... ad. ♂	(81±) 42	12	16	15	54	$7\frac{1}{2} \times 5\frac{1}{2}$	7	
Hazara (type of <i>montanus</i> ) ... ad. ♂	(80±) 40	13	$13\frac{1}{2}$	$14\frac{1}{2}$	52	$8 \times 6$	7	
Rajputana, Mt. Abu. ... ad. ♂	82	$43\frac{1}{2}$	12	17	53	...	...	
,, ,, ... ad. ♂	79	41	13	15	51	$7\frac{1}{2} \times 5$	7-	
,, Sambhar ... ad. ♂	78	40	13-14	14	51	$8 \times 5\frac{1}{2}$	$7\frac{1}{2}$	
,, ,, ... ad. ♂	74	39	12	15	48	$7\frac{1}{2} \times 5$	$6\frac{1}{2}$	
Sind, Khairpur ... ad. ♂	79	40	12	$15\frac{1}{2}$	$14\frac{1}{2}$	$8 \times 6$	$7\frac{1}{2}$	
,, Sukkur ... ad. ♂	78	41	$12\frac{1}{2}$	15	52	$7\frac{1}{2} \times 5$	7	
Gujerat, Palanpur ( <i>ballens</i> type) ... ad. ♂	79	41	12	15	51	$8+ \times 5+$	7	
Baluchistan, Panjgur ... ad. ♂	75	40	15	15	50	$8- \times 5$	7	
Persia, Shiraz ... ad. ♂	78	$39\frac{1}{2}$	13	15	51	$8 \times 5$	7	
Kangra (largest) ... ad. ♂+♀	81	44	$13\frac{1}{2}$	$16+$	$16+$	$8 \times 5\frac{1}{2}$	7	
,, (smallest) ... ad. ♂+♀	72	36	12-	14-	48	$7 \times 5$	7	
,, Average of 9 ... ad. ♂+♀	$75\frac{1}{2}$	...	...	...	...	...	...	
Chamba ... ad. ♂+♀	77	37	13	$13\frac{1}{2}$	51-	$8 \times 5$	7	
,, ,, ... ad. ♂+♀	73	38	13	$13\frac{1}{2}$	47-	$7\frac{1}{2} \times 5$	$6\frac{1}{2}$	
Kohat, N.W.F. Prov. ... ad. ♂+♀	75	37	15	$14\frac{1}{2}$	13	$8 \times 6$	7	
Rajputana, Jodhpur ... ad. ♂+♀	73	38	12-	14-	13	...	...	
,, Sambhar ... ad. ♂+♀	71	35	11	12	45-	$7 \times 5$	$6\frac{1}{2}$	
Sind, (Karachi Mus.) ... ad. ♂+♀	75	39	12	14	13	...	$7\frac{1}{2} \times 5$	
,, Khairpur ... ad. ♂+♀	74	$37\frac{1}{2}$	10	14	13	49	$7 \times 5$	
,, ,, ... ad. ♂+♀	72	36	11	13	13	46+	$7+ \times 5$	

*Herpestes edwardsii edwardsii*, Geoffroy.

'The Indian Mongoose', Edwards, *Nat. Hist. Birds*, iv, p. 199 (1751).

*Herpestes edwardsii*, Geoffroy, *Descr. de l'Égypte*, ii, p. 139 (1812), (not of Thomas and Wroughton).

*Herpestes pondiceriana*, Gervais, *Voy. de la Bonite*, i, p. 32 (1841).

*Mungos mungo ellioti*, Wroughton, *Bomb. Nat. Hist. Soc.*, xxiv, pp. 51 and 53 (1914), (not *elliotti*, Blyth).

*Herpestes edwardsii carnaticus*, Thomas, *Journ., Bomb. Nat. Hist. Soc.*, xxviii, p. 23 (1921).

Locality of the type of *edwardsii*, 'East Indies'; of *pondiceriana*,<sup>1</sup> Pondicherry; of *elliotti* Wroughton and *carnaticus*, Dharwar.

<sup>1</sup> This name was apparently intended for a specimen from Pondicherry mentioned by Cuvier and Geoffroy (*Hist. Nat. Mamm.* 1819) as La Mangouste.



*Distribution*: Southern India, Western and Eastern Ghats, south of the Nerbada River, from Ratnagiri to Travancore and Madura.

Distinguished on the average in its unfaded coat from *nyula* by its darker general tint owing to the blackish brown bands in the hairs being more extensive than the whitish or buffy white bands. The coat also is shorter, about 40 mm. or a little over; the wool is dark, usually olive grey but often with a strong ochreous tinge; there is typically some red on the head and ears, but this is variable in amount; the legs are darker or lighter brown and grizzled, the tail tip is pale ochreous and the under side is usually, but not always, speckled with black or brown.

This description applies generally to a large number of skins from the following western localities:—Ratnagiri, January 21 to 28; Dharwar, 2,000-2,500 ft., October 30 to February 18; N. Kanara, 1,900 ft., January; N. Coorg, 3,555 ft., January 16 to February 15; S. Coorg, 2,000 ft., January 10 to February 6; Seringapatam, 2,340 ft., October 12 to 28; Cochin, 1,500 ft., June 8; Nilgiri Hills, 3,500 ft., undated; Trivandrum in Travancore, August 4 to September 2. Of these the Travancore skins are practically indistinguishable from those of the Ceylon race, *lanka*.

Skins from the eastern districts of S. India are more variable. Of two, undated, ticketed Madras (Jerdon), one is like those above described, the other has the pale speckling more silvery. Similarly paler is one from the Palkonda Hills, S. Cuddapah, 1,000 ft., August 17; one from the Shevaroy Hills, 4,500 ft., May 17; some from Tirthamalai, Salem, 3,000 ft., June 22 to July 9; and one undated, from Kombu, S. Coimbatore; but one from the northern slopes of the Palni Hills, 3,000 ft., December 15, is a dull dark, short coated skin, and of two from High Wavy Mountain in Madura, near the Travancore border, May 28 to 30, one is like the Salem skins, the other is paler with a yellowish wash, broader pale bands in the contour hairs, and altogether is more like *nyula* than typical *edwardsii*.

The Survey also secured through Baptista many additional specimens, from Kurnool, May, the Palkonda Hills, 1,500 ft., July; the Vontimitta Range, 325 ft., August; the Dharmapuri Range, N. Salem, 850 ft., August and October; and the Denkanikota Range, 3,062 ft., October. These skins are all pale and silvery very like pale skins of *nyula* but with slightly finer speckling and almost always less red on the head and legs, although one from the Palkonda Hills is as red on the head as typical *nyula*.

Judging from a specimen in the British Museum collected by Dr. Cantor in Wellesley Province and identified by him as *Herpestes griseus*, it is this Southern Indian race that occurs in the Malay Peninsula and not the 'Bengal' race (*nyula*) as supposed by Blyth and Jerdon. The first record from Malacca was made by Cuvier and Geoffroy [*Hist. Nat. Mamm.* pl. 189 (1819)] who figured and described a specimen as 'La Mangouste' and later (*Suppl. Table Gén.*, p. 3 (1842)) identified it as *Herpestes mungo*. This specimen was described as *Herpestes frederici* by Desmarest [*Dict. Sci. Nat.*, xxix, p. 60 (1823)]. Subsequently it was named *H. malaccensis* by Fischer [*Syn. Mamm.*, p. 164 (1829)], who erroneously, and to the confusion of some authors, assigned *malaccensis* to Cuvier. But clearly *malaccensis* is a synonym of *frederici* and both are synonyms of *edwardsii* according to my identification of the last. The point is of some importance in nomenclature because, as stated above, Blyth and, following him, Jerdon used *malaccensis* for an Indian Mongoose; and comparatively recently Kloss when citing a specimen from Larut, nr. Perak, as *Mungos mungos* added that if distinct the Malayan animal would take the name *malaccensis* [*Journ., Fed. Mal. St. Mus.*, vii, p. 123 (1917)]. Kloss's ♀ specimen measured 15 in. in the head and body, but had an exceptionally short tail, only  $11\frac{1}{2}$  in., almost exactly the same as in one of Pillay's specimens of *edwardsii* from Travancore and in some specimens of *lanka* from Ceylon; but Cuvier's specimen, the type of *frederici* (*malaccensis*) was 11 in. in head and body, 12 in. in the tail. No doubt it was young and probably the terminal hairs were included in the tail which would make it, without the hairs, about as long as the head and body.

This Mongoose is believed to have been imported into Malaya from India. This seems probable since there is no record of *edwardsii* from Burma.

Flesh measurements of *H. edwardsii edwardsii* are as follows:—

		Head and body	Tail	Hind-foot
Dharwar ( <i>carnaticus</i> type)	... ad. ♂	19 $\frac{3}{8}$	16 $\frac{2}{5}$	3 $\frac{3}{5}$
" "	... ad. ♂	17 $\frac{1}{5}$	16	3
S. Coorg	... ad. ♂	17	14	3-
Cochin	... ad. ♂	18 $\frac{1}{2}$	15 $\frac{3}{4}$	2 $\frac{3}{4}$
Trivandrum	... ad. ♂	15 $\frac{2}{5}$	13 $\frac{1}{2}$	2 $\frac{1}{2}$
Kurnool	... ad. ♂	17 $\frac{2}{5}$	16 $\frac{1}{5}$	3 $\frac{1}{4}$
" "	... ad. ♂	16 $\frac{1}{2}$	16 $\frac{1}{5}$	3 $\frac{1}{5}$
Palkonda Hills	... ad. ♂	17 $\frac{1}{3}$	14 $\frac{1}{5}$	3 $\frac{1}{5}$
" "	... ad. ♂	15 $\frac{1}{5}$	14	3 $\frac{1}{5}$
Vontimitta Range	... ad. ♂	17 $\frac{1}{4}$	15 $\frac{1}{4}$	3 $\frac{1}{4}$
Shevaroy Hills, Salem	... ad. ♂	18 $\frac{1}{5}$	17 $\frac{3}{5}$	3 $\frac{1}{5}$
Madura	... ad. ♀	18 $\frac{1}{5}$	16	3-
Ratnagiri	... ad. ♀	15 $\frac{2}{5}$	13 $\frac{1}{4}$	2 $\frac{3}{5}$
Dharwar	... ad. ♀	15 $\frac{2}{5}$	15 $\frac{2}{5}$	2 $\frac{1}{5}$
N. Coorg	... ad. ♀	15 $\frac{1}{5}$	13	2 $\frac{1}{5}$
Trivandrum	... ad. ♀	14 $\frac{3}{5}$	13 $\frac{1}{4}$	2 $\frac{1}{5}$
Kurnool	... ad. ♀	16	14 $\frac{1}{5}$	2 $\frac{1}{5}$
" "	... ad. ♀	15 $\frac{1}{5}$	14 $\frac{1}{5}$	3
Palkonda Hills	... ad. ♀	16	14	3
" "	... ad. ♀	14 $\frac{2}{5}$	14	3-
Vontimitta Range	... ad. ♀	16	14 $\frac{2}{5}$	3
Dharmapuri Range, Salem	... ad. ♀	15 $\frac{3}{5}$	14 $\frac{1}{5}$	3

The weight of adult ♂ specimens is usually from 3 to 4 lbs., of ♀ specimens from 2 to 2 $\frac{1}{2}$  lbs.; but the ♂ from Madura was 6 lbs. and the ♀ from Ratnagiri 4 lbs.

#### *Herpestes edwardsii lanka*, Wrought.

*Herpestes griseus*, Kelaart, *Prodr. Faun. Zeyl.*, p. 41 (1852), (not of Geoffroy).

*Mungos lanka*, Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxiv, p. 53 (1915).

*Herpestes lanka*, Phillips, *Man. Mamm. Ceylon*, p. 177 (1935).

*Locality of type*: Cheddikulam, N.P., Ceylon.

*Distribution*: Ceylon, 'confined to the low country dry zone' up to 500 ft. (Phillips).

Very closely resembling the South Indian race, but distinguished by having the contour hairs shorter and the speckling finer, the two features going together, and in being on the average less red on the head and feet and less richly tinted in the wool when the coat is unfaded.

Wroughton gave full specific rank to this Ceylonese representative of *edwardsii* because of the alleged absence of intergradation between it and the Indian specimens. Nevertheless the S. Indian race is obviously intermediate between the Ceylonese and the more northern Indian races, as might be expected. The two features Wroughton relied on for the status he assigned to *lanka* were the very fine grizzling and the absence of ferruginous tint from the face and feet. These characters hold good in the four skins in the British Museum, namely the type from Cheddikulam, N.P., November 12; two from Tammaneva, N.C.P., May 3 and 9; and one, undated, received from the Colombo Museum. These are very much alike, varying very slightly in the tint of the speckling, the practical identity in colour and coat between the November and May skins suggesting that the seasonal differences are slight. The coat in these specimens is only up to about 30 mm.; the wool is scanty and drabby grey in hue, without the ochreous tinge common in the S. Indian race, and there is no trace of red on the head, ears, feet or elsewhere. But sometimes there is no red in even dark coloured S. Indian skins, e.g. some from Travancore, and it has apparently faded out in some summer skins

from the Eastern Ghats. Phillips, moreover, in his description of *lanka* says that the feet and head have a slightly reddish tinge. With regard to the redness all that can be said of *lanka* is that it is on the average less red than the S. Indian race.

The following flesh-measurements in English inches were recorded by Phillips:—

	Head and body	Tail	Hind-foot
ad. ♂ :	18+	13 $\frac{1}{4}$	3-
ad. ♀ :	15 $\frac{1}{2}$	12	2 $\frac{3}{4}$
av 4 ♂+♀ :	14	10 $\frac{1}{2}$	2 $\frac{1}{2}$

The type of the race, a young adult ♂, is a little smaller than the largest ♀ in the British Museum from Tammanewa which agrees closely with Phillips's largest ♀.

SKULL MEASUREMENTS OF *H. edwardsii edwardsii* AND OF *H. edwardsii lanka*.

LOCALITY AND SEX	Cond. Bas. Length	Zygom. Width	Post Orb. Width	Int. Orb. Width	Max. Width	Mand. Length	<i>pm</i> *	<i>m</i> <sub>1</sub>
<i>edwardsii</i>								
Dharwar ad. ♂	81	42	14-	15	15	52	8- × 6-	7
" (carnaticus) ad. ♂	80	43	13 $\frac{1}{2}$	16-	15+	52	8 × 6	7
S. Coorg ad. ♂	80	41	14	15	15	51	7 $\frac{1}{2}$ × 5 $\frac{1}{2}$	7
" ad. ♀	79	41	11	14 $\frac{1}{2}$	14	53	7 × 5 $\frac{1}{2}$	7
Cochin yg. ad. ♀	80	40	14	15	15	51	7 × 4	7
Kurnool ad. ♀	86	44	13	16	16	55	8 × 5 $\frac{1}{2}$	7+
" ad. ♀	80	42	11	15	15	53	8 × 5	7+
Palkonda Hills ad. ♂	81	39	13	15	15	52	7 × 5	7
" ad. ♀	77	39	12	14	15	50	7 × 5 $\frac{1}{2}$	7
Vontimitta Range ad. ♀	78	40	12	15	14	51	7 × 5	7
Salem ad. ♀	80	41	11	15	15	52	7 × 5	7-
Dharwar ad. ♂+♀	76	36	12	13	12	49	7 × 5	7
" ad. ♂+♀	73	37	12	14-	13	46	7 × 4 $\frac{1}{2}$	6
S. Coorg ad. ♂+♀	77	36	11	13	12	50	7 × 5	7-
Seringapatam ad. ♂+♀	75	40	12	14 $\frac{1}{2}$	14	...	7 × 5	...
Kurnool ad. ♂+♀	76	39	11	14	14	48	7 × 5	7
Palkonda Hills ad. ♂+♀	74	38	12-	14	13	50	7- × 4 $\frac{1}{2}$	6
" ad. ♂+♀	72	36	11	14	13	48	7 × 5	6 $\frac{1}{2}$
" ad. ♂+♀	68	35	13	13	12 $\frac{1}{2}$	44	7 × 5	6 $\frac{1}{2}$
Vontimitta Range ad. ♂+♀	76	37	13	14	13	49	7 $\frac{1}{2}$ × 5	7
<i>lanka</i>								
Cheddikulam (type) yg. ad. ♂	79	40	13-	14 $\frac{1}{2}$	15	51	8 × 5 $\frac{1}{2}$	7
" (type) ad. ♀	72+	35	11 $\frac{1}{2}$	13 $\frac{1}{2}$	13	46	8 × 5	7

**Herpestes smithii**, Gray.

For bibliography and synonymy see under the subspecies.

*Distribution*: Central and Southern India; Ceylon.

Very closely related to *H. edwardsii* but distinguished by its slightly larger size, the black-tipped tail, generally darker colour and generally more pronounced tendency to erythrim, although never so red as in the typical *ferrugineus* mutant of that species. In the slightly larger skull the occipital and sagittal crests are at least on the average less strongly developed.

Since I have seen no intermediates between *smithii* and *edwardsii* in the colour of the tail-tip, I adopt the prevalent view that they represent distinct species. But the colour of the tail-tip varies from black to pale individually in some African Mongooses. Hence in this case it may possibly indicate that *smithii*, being a jungle-form, is a 'habitat-mutant' of *edwardsii*.

In his revision of this species Thomas (*Journ., Bomb. Nat. Hist. Soc.*, xxviii, p. 23 (1921)] admitted five races:<sup>1</sup>—(1) the typical form, *smithii*, with *elliotti* and *torquatus* as synonyms, ranging from Hoshangabad to the Nilgiri Hills in Western India; (2) *jerdonii*, with *monticolus* as a synonym, from the Eastern Ghats; (3) *canens* from Mt. Abu in S.-W. Rajputana and Hazaribagh; (4) *rusanus* from Sambhar in Rajputana; (5) *zeylanicus*, a substitute for the inadmissible name *rubiginosus*<sup>2</sup> adopted by Kelaart, from Ceylon. A few specimens from the Eastern Ghats have been received at the Museum since Thomas wrote, but I do not think his conclusions with regard to the Indian forms were justified by the material he had in his hands. On the available evidence it seems to me that the difference in colouration between his *smithii*, *canens* and *jerdonii* are due to seasonal changes in the coat; and his race *rusanus* was based upon a single specimen with a rather small skull. Hence I regard all the described Indian forms as representing a single race. I adopt, however, his name for Ceylonese specimens, which, on the average, appear to differ from the continental form.

The two races, here provisionally admitted, may be distinguished as follows:—

- A. Tail longer, sometimes longer than head and body; more grey and less red on the average in the general colour (India) ... .. *smithii*.
- B. Tail shorter, never so long as head and body; more red and less grey on the average in the general colour (Ceylon) ... .. *zeylanicus*.

**Herpestes smithii smithii**, Gray.

*Herpestes smithii*, Gray, *Charlesw. Mag. Nat. Hist.*, i, p. 578 (1837); id. *Proc. Zool. Soc.* (1851), p. 131, pl. 30.

*Calictis smithii*, Gray, *Proc. Zool. Soc.* (1864), p. 565.

*Herpestes elliotti*, Blyth, *Journ., As. Soc. Beng.*, xx, p. 162 (1851).

*Herpestes jerdonii*, Gray, *Proc. Zool. Soc.* (1864), p. 550.

*Herpestes torquatus* (Elliot MS.), Kelaart, *Prodr. Fann. Zeyl.*, p. 40 (1852); Jerdon, *Mamm. Ind.*, p. 136 (1867).

*Herpestes monticolus*, Jerdon, *Mamm. Ind.*, p. 135 (1867).

*Herpestes smithii rusanus* and *canens*, Thomas, *Journ., Bomb. Nat. Hist. Soc.*, xxviii, p. 25 (1921).

<sup>1</sup> He set aside *thysanurus*, applied by Wagner in 1839 to a Mongoose, with a black-tipped tail, said to have come from Kashmir, because no Mongoose with that character has since been recorded north of Rajputana. Wagner's record must nevertheless be borne in mind [*Münch., Gel. Anz.*, ix, p. 440 (1839) and *Säng., Suppl.*, ii, p. 301 (1841)].

<sup>2</sup> This name was given by Wagner to a specimen of *vitticollis* from the 'East Indies'. Both Kelaart and Blanford overlooked Wagner's statement, detected by Thomas, that the neck has a black mark on each side.



*Locality of type of smithii* unknown; of *elliotti*, the Carnatic; of *jerdonii*, 'Madras'; of *torquatus*, 'S. India'; of *monticolus*, inland from Nellore; of *rusanus*, Sambhar, Rajputana; of *caucus*, Mt. Abu, Rajputana.

*Distribution*: Central and Southern India from Rajputana, eastward to Bengal, and southwards through the Eastern and Western Ghats.

The type of *smithii* Gray has no definite locality, date or flesh-measurements, but there is no good reason to dissent from Thomas's decision that it came from somewhere near Bombay. It is no doubt an early winter skin, the contour hairs on the rump being about 53 mm. long and there is abundance of dark brownish under wool. The general colour is dark with black and greyish white speckling and a reddish cast traceable in the hairs of the upper side, particularly on the head, neck and between the shoulders; the fore leg is dark reddish brown, speckled and the hind leg is brighter red.

Satara (S. H. Prater). An adult ♂ collected at Mehda, January 11, is a very close match of the type in every respect and justifies Thomas's allocation of the latter; but a second ♂ skin from Mehda, January 13, differs in having the pale speckling of the back buffy with no appreciable red cast. A third, adult ♂ from Patan, December 11, is darker than the type, with buffy grey speckling and no appreciable red in the hairs.

Poona (P. H. Gosse). An adult ♂ from Khandala, 2,500 ft., April 14, has the coat a little longer than in the Satara skins, about 60 mm., but the under wool scantier than in them and in the type and the pale speckling is clearer whitish, especially strongly contrasted with the skin from Patan, but there is no red cast except towards the head and the legs are even darker than in the Patan skin. The later date of this skin suggests that the under wool is moulting and the pale speckling bleaching. It very closely resembles the skin from Kurnool in the Eastern Ghats referred to below.

Rajputana, Sambhar (Hume). The type of *rusanus* Thos., an ad. ♂, January 13, in winter coat, is indistinguishable in colour and coat from the Satara skins as Thomas stated; but two ad. ♂ from Mt. Abu (Crump), including the type of *caucus* Thos., collected June 2 and 3, differ in having the coat harsh and thin with little or no underwool, the general colour paler and greyer, with the pale speckling bleached white, and no red cast, although there is, as usual, some ochreous before the black tail-tip. These skins closely resemble the skin from Salem in the Eastern Ghats mentioned below.

Hoshangabad, 2,500 ft. (Crump), an ad. ♂, March 9, in winter coat, closely resembles the skin from Sambhar and Satara; and a ♀ skin from Hazaribagh (Crump), May 2, in summer coat, is like the Mt. Abu skins but has some red on the head and nape and is more like the Salem skin.

Skins from the Eastern Ghats vary like those described above.

Hills inland of Nellore: The ♂ lectotype of *jerdoni* Gray (= *monticolus* Jerdon) is a soiled skin, formerly exhibited, with a thin, harsh, dead coat and no appreciable underwool. There is a little red on the muzzle and head, the merest trace on the neck but none elsewhere. A ♀ with the same history is a better skin, but the coat is thin with no wool, the general hue being grey with blackish brown speckling, and a little red on the head and muzzle and some yellowish or buff above the hock and close to the black tail-tip. A third old skin labelled 'Madras' is very similar to the preceding two. It was on the evidence of these three skins that Thomas separated *jerdoni* from typical *smithii*.

A series of summer skins collected by Baptista in the Palkonda Hills, 1,500 and 1,600 ft., in June and July and in the Vontimitta Range, 325 ft., August 8 to 11, are topotypes of *jerdoni* since these hills are inland of Nellore. The coat is long from about 50 to 55 mm. but, in accordance with the season, has at most only a little underwool. The general colours of the back may be tolerably clear grey or may show a paler or richer yellow cast representing apparently the red of some winter skins but bleached. One from Kondagorlapenta in the Palkonda Hills, July 17, closely matches the skin from the Shevaroy Hills described below except that the red behind the shoulders of the latter is replaced by ochreous. Another skin from Dasarladoddi, Palkonda Hills, June 26, has no red or yellow behind the shoulders. At Kurnool in Cuddapah Baptista collected two skins, one May 2, closely matching the skin from Salem, April 23, described below; the other April 27 is more iron-grey than the preceding, being speckled black and silvery grey with a faint buffish wash on the back and very little red in front.

Shevaroy Hills (W. M. Daly). An unsexed, undated specimen with a full long coat, the contour hairs over 60 mm. and the tolerably abundant olivaceous wool 20 mm. General colour darker than in the preceding skins from the Eastern Ghats owing to the more intense black speckling, the red tint conspicuous on the head, neck, down the middle line of the back and increasing in amount and extent on the rump and outside of the thighs, also a good deal of it on the hind leg above and below the hock and on the fore leg from the elbow nearly to the wrist. Although this skin was in the Museum when Thomas revised *H. smithii*, he did not refer to it. It entirely negatives the distinction he drew between skins from the Western and Eastern Ghats. It obviously belongs to the same form as the type of *smithii* and the examples from Satara and its difference from the previously described skin from the Eastern Ghats is due to the coat being fresh and unfaded.

Salem, a little south of the Shevaroy Hills. A skin from Karumbapatti (Baptista), April 23, has the black speckling as in the Shevaroy skin and some red on the head and neck, but is not red elsewhere, showing a yellowish cast behind the neck on the upper side indicating incipience of bleaching as in some of the topotypes of *jerdoni*.

The flesh measurements in English inches and the weights of some specimens are as follows:—

—	Head and body.	Tail.	Hind foot.	Weight lbs.
Mt. Abu ( <i>canens</i> type) ... ad. ♂	17 $\frac{1}{2}$	16 $\frac{2}{3}$	3 $\frac{2}{3}$	4
" ... ad. ♂	17	17 $\frac{2}{3}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$
Hoshangabad ... ad. ♂	16 $\frac{2}{3}$	16 $\frac{2}{3}$	3 $\frac{2}{3}$	3 $\frac{1}{2}$
Satara, Mehda ... ad. ♂	18 $\frac{1}{2}$	17 $\frac{1}{2}$	3 $\frac{2}{3}$	6
" Patan ... ad. ♂	17+	15 $\frac{2}{3}$	3+	6
Poona, Khandala ... ad. ♂	16 $\frac{1}{2}$	15 $\frac{1}{2}$	3 $\frac{2}{3}$	...
Kurnool, Diguvametta ... ad. ♂	27 $\frac{2}{3}$	15	3 $\frac{1}{2}$	...
" " ... ad. ♂	16	16 $\frac{3}{4}$	3 $\frac{2}{3}$	2 $\frac{1}{2}$
Palkonda Hills ... ad. ♂	17 $\frac{1}{2}$	16 $\frac{1}{2}$	3 $\frac{2}{3}$	4 $\frac{1}{2}$
Vontimitta Range ... ad. ♂	18	18 $\frac{1}{2}$	3 $\frac{2}{3}$	4
" " ... ad. ♂	17 $\frac{1}{2}$	18 $\frac{1}{2}$	3 $\frac{2}{3}$	3 $\frac{1}{2}$
Hazaribagh, Bengal ... ad. ♀	15 $\frac{2}{3}$	16	3+	...
Palkonda Hills ... ad. ♀	17 $\frac{1}{2}$	15 $\frac{2}{3}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$

This table shows that the tail in this race is about as long as the head and body. It may be as much as about one inch longer or two inches shorter.

#### *Herpestes smithii zeylanicus*, Thos.

*Herpestes rubiginosus*, Kelaart, *Prodr. Faun. Zeyl.*, p. 43 (1852). [Not *Crossarchus* (= *Herpestes*) *rubiginosus* Wagner.]

*Herpestes smithii*, Blandford, *Mamm. Brit. Ind.*, p. 126 (1888), (in part).

*Herpestes smithii zeylanicus*, Thomas, *Journ., Bomb. Nat. Hist. Soc.*, xxviii, p. 23 (1921); Phillips, *Man. Mamm. Ceyl.*, p. 188 (1935), (misquoted as *zeylanicus*).

*Locality of the type of zeylanicus*: Mankeni, E.P., Ceylon.

*Distribution*: Ceylon.

Rather doubtfully distinguishable from the typical continental Indian form by being a little darker on the average, never so grey as the greyest skins of the latter and the reddest a little redder, but some skins both 'grey' and 'red' practically indistinguishable from Indian skins. Also the tail seems to be relatively a little shorter.<sup>1</sup>

<sup>1</sup> Neither the flesh measurements nor the skulls bear out Thomas's statement that this race is larger than typical *smithii* from Western India.

To the following list of the flesh measurements in English inches and weights of some specimens in the British Museum, I have added particulars of the dimensions recorded by Phillips.

		Head and body	Tail	Hind-foot	Weight lbs.
Phillips's largest	ad. ♂	18 +	14½	3½	4¾
Wellegalli S. P.	ad. ♂	17½	15½	3½	4¼
Mankeni, E. P.	ad. ♂	17½	15	3	3¼
Matugama, W. P.	ad. ♂	16½	13½	3 +	—
Phillips's Aver. of 8	ad. ♂	16½	12½	3 +	3¾
„ largest	ad. ♂	16¾	14¾	3½	2¾
Ranna, S. P.	ad. ♂	16½	13½	3 +	—
Mankeni, E.P.	ad. ♂	15½	12½	3—	3
Kala Oya, N. W. P.	ad. ♂	14½	13½	3 +	2¾
Phillips Aver. of 2	ad. ♂	15½	13 +	3 +	2½

Although the head and body are about the same length as in typical *smithii*, the tail is on the average shorter, and is always shorter than the head and body, nearly 4 in. in some cases. This also applies to several sub-adult additional specimens collected by E. W. Mayor which are not included in the table.

SKULL MEASUREMENTS OF *H. smithii smithii* AND *H. smithii zeylanicus*.

NAME, LOCALITY AND SEX		Cond. Bas. Length	Zygom. Width	Post. Orb. Width	Int. Orb. Width	Max. Width	Mand. Length	<i>pm</i> <sup>4</sup>	<i>mi</i> <sup>1</sup>
<i>smithii</i>									
Satara, Mehda	ad. ♂	90	45	13	17½	17	60—	8 × 6	7
Mt. Abu, Rajput.									
( <i>canens</i> type)	ad. ♂	88	46	15	19	18	57	8 × —	...
Satara, Patan	ad. ♂	86	45	13	16½	17	56	9 × 6	8—
Palkonda Hills	ad. ♂	86	45	14	17	16	57½	8 × 5	7
Poona, Khandala	ad. ♂	84	45	17	17	16½	56—	8 × 5½	7
Vontimitta Range									
just	ad. ♂	83	40	14	17	16	53	9 × 5	7½
Sambhar, Rajput.									
( <i>rusanus</i> type)	ad. ♂	82	44—	11	15	16	53½	8 × 5	7
Palkonda Hills	ad. ♀	86	46	14	17	16	56	8 × 6	7
Hazaribagh	ad. ♀	81	42	15	16	16	52	7½ × 5	7
Nilgiri Hills	ad. ♀	80	43	12	16	16	53	8 × 6	7
<i>zeylanicus</i>									
Mankeni (type)	ad. ♂	89	49	15	19	19	59	9 × 6	8—
Matugama	ad. ♂	86	45	15	17	16	56	8½ × 5	8—
Kala Oya	ad. ♀	81	42	12	15	15	53	9 × 5	7½
Mankeni	ad. ♀	78	42	15	16	...	51	8 × 5½	7

In these tables the skulls are enlisted to show the range in condylobasal length, regardless of geographical distribution. It will be noticed that the difference between the skulls of the type of *canens* and of *rusanus*, upon which Thomas relied for distinguishing the two alleged races is exactly the same as the difference between the two ♂ skulls of *H. edwardsii edwardsii* from Kurnool entered on the previous table (p. 225). It also shows that the skulls of the S. Indian *smithii* and the Ceylonese *zeylanicus* are on the average noticeably a little larger than the skulls of *H. edwardsii edwardsii* and of *H. edwardsii lanka* which occur in the same areas respectively.

*Herpestes smithii* is the type of the genus *Calictis*, Gray [*Proc. Zool. Soc.* (1864), p. 564].

### *Herpestes fuscus*, Waterhouse.

For bibliography and synonymy see under subspecific headings.

*Distribution*: S. India and Ceylon.

Size about the same on the average as *edwardsii* and *smithii* but the tail relatively considerably shorter, only about two-thirds the length of the head and body, the contour hairs less harsh and the upper half or third of the sole of the hind foot clothed with hair throughout the year. General colour very variable according to the subspecies, ranging from blackish brown with the dark bands in the contour hairs extensive and the white very narrow in the typical Indian race, to nearly uniformly ochreous or sandy with the dark bands reduced to fine, comparatively indistinct speckling in two of the Ceylonese races.

In its general form and the shape of the teeth, the skull is very like that of *edwardsii* and *smithii*, but it is typically less inflated in the frontal region so that the upper surface of the muzzle is a little less steeply sloped and may be slightly concave, the anterior tympanic portion of the bulla is smaller and the external crest a little better developed.

#### *Analytical Key to the subspecies.*

- A. On the average a little larger and more uniformly dark brown above and especially below; the tip of the tail not lighter than the rest (S. India) ... .. *fuscus*.
- B. On the average smaller and paler or brighter in hue, not so brown especially below; tip of the tail paler than the rest (Ceylon).
1. General colour darker, dark speckling conspicuous on the back, flanks and tail.
    - a. Slightly smaller and less red ... .. *flavidens*.
    - b. Slightly larger and redder ... .. *rubidior*.
  2. General colour not so dark, the dark speckling not so conspicuous on the back, obsolete on the flanks and tail.
    - a. Darker and redder, dark speckling on back blackish and more conspicuous ... .. *macarthiaae*.
    - b. Paler, straw-coloured, dorsal speckling brown and faint ... .. *siccatus*.

### *Herpestes fuscus fuscus*, Waterhouse.

*Herpestes fuscus*, Waterhouse, *Proc. Zool. Soc.* (1858), p. 55; Jerdon, *Mamm. Ind.*, p. 136 (1867); Anderson, *Anat. Zool. Res. Yunnan*, p. 184, pl. 8, figs. 1-2 (skull), (1875); Blanford, *Mamm. Brit. Ind.*, p. 127 (1888); and of subsequent authors.

*Locality of the type*: India.

*Distribution*: S. India, typically in the hills from 3,000 to nearly 6,000 ft.

Slightly larger on the average than the Ceylonese races, with a rather longer, fuller coat, the contour hairs of the rump from about 40 to 60 mm., and on the whole a little darker and less bright in colour, the general hue dark brown or blackish above, relieved by the fine buff or buff-grey speckling,



the contour hairs with a small black tip and a narrow pale penultimate band and below the latter typically two very extensive black bands separated by a very narrow greyish one, these black bands always much wider than the pale, although the proportion varies individually to a certain extent; the wool olive brown at the summit, darker at the base; there is no red in the pelage, the head and tail being coloured approximately like the back, although the pale bands of the tail, the tip of which is like the rest, are often greyer and more extensive; the under side brownish, a little paler than the upper and not so speckled.

The following notes show the variations in the skins in the British Museum which on the whole form a very uniform series:—

S. Coorg, Virajpet, 3,000 ft. (Shortridge). An ad. ♂, January 30, is dark brown with fine buff speckling; an ad. ♀, January 27, is blacker with greyer buff speckling; the contour hairs being about 42 mm. in both.

Palni Hills, Tiger Shola, 5,700 ft. (McCann). An ad. ♂, April 24, is like the ♀ from Virajpet; an ad. ♀, April 27, is like the ♂ from Virajpet. The coat in the ♂ is about 64 mm., in the ♀ about 44 mm.

Madura, High Wavy Mt., 5,000 ft. (Prater), a skin like the ♂ from Virajpet, with the coat 46 mm.

Travancore, Primerd in Trivandrum, 3,800 ft. (Ferguson), one skin with the pale speckling rather finer and duller than in the preceding and the coat 53 mm.

Nilgiri Hills, Ootacamund (Gosse), July, a skin very similar to the ♂ from Virajpet, but the coat is 59 mm. and the underwool thinner.

'Madras' (Jerdon). An undated specimen, marked by Thomas as doubtless from the Nilgiris, is rather paler than the rest, owing to the pale bands of the contours, which are 40 mm. long, being noticeably wider. In this respect it is most strongly contrasted with the Travancore skin and with the type in which the speckling is fine and the general colour brown, with the contour hairs 42 mm. as in the ♂ from Virajpet.

The flesh measurements in English inches and weights of some specimens in the British Museum are as follows:—

---		Head and body.	Tail.	Hind-foot.	Weight lbs.
S. Coorg	... ad. ♂	19 $\frac{1}{2}$	12 $\frac{3}{4}$	3 $\frac{2}{3}$	6
Madura	... ad. ♂	17 $\frac{1}{2}$	12 $\frac{1}{2}$	...	5
Palni Hills	... ad. ♂	16 $\frac{2}{3}$	12	3	3
"	... ad. ♂	14 $\frac{2}{3}$	10	3	3
S. Coorg,	... ad. ♀	16 $\frac{1}{3}$	12	3	3 $\frac{1}{2}$

These dimensions suggest that Coorg specimens are on the average larger than those from the Palni Hills; but the data are insufficient to warrant the conclusion that more than one race is represented. The length of the head and body is larger on the average than in *H. edwardsii* and the tail is manifestly much shorter.

The skulls vary comparably to the skins. The two ♂ skulls entered in the table (p. 239) are not quite the largest and smallest in length and width. Actually the longest is the skull of the skin from Madura with a condylobasal length of 89 mm., and the shortest a second skull from the Palni Hills with the same length 82 mm. The widest is that of the type with a zygomatic width of 49 mm. and a maxillary width of 18 mm., the condylobasal length being 87 mm., very nearly the same as the ♂ from S. Coorg.

**Herpestes fuscus flavidens, Kelaart.**

*Herpestes flavidens*, Kelaart, *Journ., R. As. Soc. Ceylon*, ii, p. 323 (1850); *id. Journ., A. S. Soc. Beng.*, xx, p. 184 (1851); *id. Prodr. Fauna Zeyl.*, p. 44 (1852); Ryley, *Journ., Bomb. Nat. Hist. Soc.*, xxii, p. 106 (1914); Thomas, *Ann. Mag. Nat.* (9), xiii, p. 239 (1924); Phillips, *Man. Mamm. Ceylon*, p. 180 (1935).

*Herpestes fulvescens*, Kelaart, *Journ., As. Soc. Bengal*, xx, p. 162 (1851) and xxi, p. 348 (1852); Blanford, *Mamm. Brit. Ind.*, p. 127 (1888), (in part).

? *Herpestes ceylanicus*, Nevill, *Taprobanian*, i, p. 62 (1887).

*Herpestes flavidens ceylanicus*, Thomas, *Ann. Mag. Nat. Hist.* (9), xiii, p. 240 (1924); Phillips, *Man. Mamm. Ceylon*, p. 186 (1935), (*ceylanicus*).

*Herpestes flavidens phillipsii*, Thomas, *Ann. Mag. Nat. Hist.* (9), xiii, p. 240 (1924).

*Locality of types of flavidens and fulvescens*, Kandy; of *ceylanicus*, Trincomalee; of *phillipsii*, Gammaduwa, E. Matale.

*Distribution*: Throughout the mountainous districts of the Central Province to over 6,000 ft., westwards to the coast near Colombo in the wet zone and eastward to Uva in the dry zone (Phillips).

A little smaller than the South Indian race, with the coat on the average shorter both on the body and tail and the pale speckling typically, but by no means always, a little brighter, the under side usually not so brown and the tip of the tail as a rule brighter than its more proximal portion, its long hairs being more uniformly ochreous or reddish with obsolete black bands.

It was probably an examination of specimens of this race that induced Anderson to record *fuscus* as occurring in Ceylon. To this Blanford demurred on the grounds that *fuscus* was in his opinion replaced in Ceylon by *fulvescens* (= *flavidens*) which he regarded as a distinct species on account of its much smaller size. He was, however, unacquainted with the smaller specimens of *fuscus* and the larger Ceylonese specimens, subsequently collected, showing complete intergradation between the two in dimensions.

The following specimens in the British Museum, assigned to this race, show considerable variation in colour:—

Kandy. Two examples collected by White are topotypes of *flavidens*. An ad. ♂ from the 'neighbourhood of Kandy' (No. 77.11.1.1) is dark brownish in general hue, the contour hairs being almost ochreous, this tint becoming dominant towards the end of the tail which has the tip reddish. This specimen possibly resembles a specimen from Newera Eliya which Kelaart recorded as a 'much darker variety than the one from Kandy'.

Another ♂ (No. 77.3.14.3), labelled Kandy, is much paler because the black in the contour hairs is not so dark and the pale speckling not so richly tinted and a little more extensive. Both these skins are undated; but the difference between them may be seasonal.

Pattipola, C.P., 6,210 ft. Two ad. ♂ (E. W. Mayor), March 2 and 14, were identified by Thomas as *flavidens*. They closely resemble the second of the two Kandy skins recorded above but are a little darker and have the pale speckling a trifle finer, in both these respects coming a little nearer the first of the topotypical examples.

Mousakanda in Gammaduwa, E. Matale, C.P., 3,000 ft. An ad. ♂ (W. W. A. Phillips), August 20, is very like the specimen from Pattipola but has the pale speckling greyer not so yellow and the tail is not so reddish at the end. This example is the type of *phillipsii* Thos.; but according to Phillips *phillipsii* cannot be maintained because the pale olivaceous tint on which it was based is purely an individual feature. Probably the difference between it and the specimen from Pattipola is seasonal and due to bleaching of the Gammaduwa skin. A second specimen, November 12, from the same locality, tolerably closely resembles the Pattipola skins, but is a trifle darker.

Kumbukkan in Uva, ad. ♀ (E. W. Mayor), July 20, very closely matches the first described darker specimen from Kandy, but is a trifle darker, the two being more alike than are the two skins from Kandy, except that the tip of the tail in the Kumbukkan skin is like the rest of that organ and not dominantly reddish ochreous. This specimen was identified by Thomas as *ceylanicus* Nevill, the type of which came from Trincomalee. Phillips unfortunately was unable to examine specimens either from Kumbukkan or Trincomalee. He therefore followed Thomas and reproduced Nevill's description of *ceylanicus*. I can find nothing in Nevill's description of *ceylanicus* to distinguish it from *flavidens*; but the final relegation of *ceylanicus* to the synonymy of *flavidens* must await the discovery of additional examples from Trincomalee. At all events the Kumbukkan skin is more like the darker Kandy skin than are the skins from Pattipola and Gammaduwa.

The following are the flesh measurements in English inches and weights of some specimens in the British Museum, supplemented by others taken from Phillips's volume:—

		Head and body	Tail	Hind-foot	Weight lbs.
Gammaduwa	... ad. ♂	16 $\frac{1}{5}$	11 $\frac{2}{5}$	3-	2·2 oz.
Pattipola	... ad. ♂	15	11 $\frac{1}{5}$	3-	...
"	... ad. ♂	14 $\frac{2}{5}$	10 $\frac{4}{5}$	2 $\frac{4}{5}$	?
Average of 5 (Phillips)	... ad. ♂	15	10	3-	2 $\frac{1}{2}$
Largest	... ad. ♂	16 $\frac{1}{5}$	12-	3-	3 $\frac{1}{2}$ — 2 $\frac{1}{2}$
Kumbukkan	... ad. ♀	13 $\frac{4}{5}$	11 $\frac{1}{5}$	2 $\frac{3}{5}$	
Average of 4 (Phillips)	... ad. ♀	13	9 $\frac{1}{2}$	2 $\frac{1}{2}$	1·11 oz.
Largest	... ad. ♀	14	9 $\frac{3}{5}$	2 $\frac{4}{5}$	1 $\frac{3}{4}$

The largest of these specimens are only a little smaller than the smallest of the South Indian race.

**Herpestes fuscus rubidior**, subsp. nov.

*Herpestes flavidens maccarthiae*, Thomas, *Ann. Mag. Nat. Hist.* (9), xiii, p. 239 (1924), (in part); Phillips, *Man. Mamm. Ceylon*, p. 184 (1935), (not *maccarthiae* Gray).

*Locality of the type*: Anasigalla, Matugama, W.P.

*Distribution*: 'Throughout the Kalutara District and the south-west of the island generally from about Panadura, 50 ft., in the Western Province to Matare and Tangalla in the Southern Province' (Phillips).

Distinguished from *flavidens* by being on the average a little larger and heavier and redder in its general colouring.

The one well preserved specimen known to me is the type, an ad. ♂ from Anasigalla Matugama, 100 ft. (W. W. A. Phillips), January 25, which was wrongly identified by Thomas as *maccarthiae*, Gray. The coat is full and longish, thicker if anything than in any of the above recorded skins of *flavidens* from high altitudes in the hilly region of Ceylon, and the general colouring, speckled red and black, is redder owing to the red rings in the contour hairs being a little more extensive and chestnut in hue; the tail is reddish at the end and the limbs are dark with fine pale speckling. The only other specimen assignable to this race that I have seen was collected at Yatiantota, 500 ft., in the Southern Province (E. W. Mayor). It is a young, undated skin, faded and moulting, with many of the contour hairs shed especially on the belly. Hence the pale reddish speckling is not so conspicuous as in the type and is rather less extensive but the general hue is redder brown and paler than in the skins identified as *flavidens*.

In the adoption of this race I follow Phillips to whom it was well-known but, misled by Thomas, he identified it as *maccarthiae*, as recorded below.

The following flesh measurements in English inches and the weights of the type of this race are supplemented by others extracted from Phillips's records:—

		Head and Body	Tail	Hind-foot	Weight lbs.
Matugama (type)	... ad. ♂	16 $\frac{3}{5}$	11 $\frac{2}{5}$	3	4
Largest (Phillips)	... ad. ♂	17 $\frac{4}{5}$	12 $\frac{3}{5}$	3 $\frac{1}{2}$	4
Average of 10 (Phillips)	... ad. ♂	16	11-	3+	3 $\frac{1}{4}$
Largest	... ad. ♀	14 $\frac{4}{5}$	10 $\frac{4}{5}$	2 $\frac{1}{2}$ +	2 $\frac{1}{4}$
Average of 5	... ad. ♀	13 $\frac{1}{5}$	10+	2 $\frac{1}{2}$	2



It will be noted that Phillips's largest ♂ is as large on the average as ♂ examples of the S. Indian race and that his largest ♀ is about the size of the smallest ♂ of that race from the Palni Hills. The table also bears out Phillips's statement that *rubidior* is on the average a trifle larger than *flavidens*.

The skull of the type, the only one known to me, is just adult, the nasal and maxillary sutures being still open. It is nevertheless well developed with complete orbits, a relatively high sagittal crest and a constricted post-orbital area. As the table of measurements (p. 239) shows it is practically as large as the ♂ skulls of typical *fuscus* from the Palni Hills.

#### ***Herpestes fuscus maccarthiae*, Gray.**

*Cynictis maccarthiae*, Gray, *Proc. Zool. Soc.* (1851), p. 131, pl. 31.

*Onychogale maccarthiac*, Gray, *Proc. Zool. Soc.* (1864), p. 570.

*Herpestes flavidens maccarthiac*, Thomas, *Ann. Mag. Nat. Hist.* (9), xiii, p. 239 (1924), (in part).

Not *Herpestes flavidens maccarthiae*, Phillips, *Man. Mamm. Ceylon*, p. 184 (1935), (see above).

*Locality of the type*: Jaffna, the northern point of Ceylon.

Distinguished from the preceding races by its generally more uniformly dark, reddish-ochreous hue above and below, the dorsal contour hairs being only indistinctly speckled with blackish, whereas those of the flanks, belly and tail show no dark speckling; legs darker, dark brown with pale speckling; underwool yellowish brown, nearly the same colour from base to summit.

No flesh measurements are available.

No doubt it was the peculiar colouration of this Mongoose, very different from that of other species of *Herpestes*, which induced Gray to assign it originally to *Cynictis*, a S. African genus with a tolerably uniform, tawny pelage. Neither Anderson nor Blanford paid any heed to the peculiarities of this Mongoose, dismissing them apparently as untrustworthy on account of the animal having been kept in captivity. Blanford also seems to have doubted the truth of Gray's statement that it came from Jaffna; but it is highly improbable that either Gray or the collector, Mr. McCarthy, invented that locality. Thomas, unfortunately, overlooked or ignored the record. If he had known it, he would probably have detected the differences between Gray's type and the specimen from S.-W. Ceylon which he identified as *maccarthiae* (see above) and its resemblance to his type of *siccatus*, which he believed to be from Mannar.

The skull of the type and only known specimen is comparatively small and poorly developed although fully adult. The orbits are incomplete behind and there is no sagittal crest, the temporal ridges forming a narrow lanceolate area on the forepart of the crown and a very low median ridge behind. Possibly the development of the skull was arrested by captivity conditions; but it shows none of the modifications which normally affect the skulls of Mongooses and other Carnivores when reared from cubhood in a menagerie.

This race of *fuscus* is the type of the genus *Onychogale* Gray [*Proc. Zool. Soc.* (1864), p. 570], a name suggested apparently, as Anderson surmised, by the longish claws of the fore foot due to the only known specimen having been kept in a cage.

#### ***Herpestes fuscus siccatus*, Thomas.**

*Herpestes flavidens siccatus*, Thomas, *Ann. Mag. Nat. Hist.* (9), xiii, p. 240 (1924); Phillips, *Man. Mamm. Ceylon*, p. 187 (1935).

*Locality of type* possibly Aripo near Mannar, N.P.

Most nearly resembling *maccarthiae*, but the general colour nearly uniformly sandy or straw-like with very faint brown speckling in the pelage of the back but more pronounced on the nape and head; the flanks, cheeks, belly and tail without dark speckling; the under fur dark, greyish brown at the base, yellowish at the summit; legs darker than the body, brownish speckled with yellow.



The only known specimen, which has no skull or flesh measurements, was collected by Holdsworth and labelled Kandy; but since it is quite unlike other Mongooses from that district, Thomas suggested that it probably came from Aripo near Mannar on the north-west coast of Ceylon where Holdsworth is known to have secured other natural history material. This view is supported by the generally pale hue of the pelage which suggests an arid habitat. The skin looks like a bleached edition of the type of *macarthiae* except for the sharp contrast between the dark base and the yellow summit of the under wool. In my opinion it is not unlikely that the types of these so-called races will prove to represent seasonal phases of a northern Ceylonese race, a view favoured by the locality of the type of *macarthiae*; but I know of no other instance of such a marked seasonal difference in *Herpestes*.

### *Herpestes vitticollis*, Bennett.

*Herpestes vitticollis*, Bennett, *Proc. Zool. Soc.* (1835), p. 67; and of subsequent authors including Blanford, *Mamm. Brit. Ind.*, p. 128 (1888); and Phillips, *Man. Mamm. Ceylon*, p. 190 (1936).

*Crossarchus rubiginosus*,<sup>1</sup> Wagner, *Schreber. Säug. Suppl.*, ii. p. 329.

*Locality of type of vitticollis*, Travancore; of *rubiginosus*, 'East Indies'.

*Distribution*: S. India and Ceylon.

One of the largest of the Oriental Mongooses invariably distinguishable by a black stripe running along the sides of the neck from behind the ear to the shoulder, composed of soft under fur and emphasized by the pale tips of the contour hairs above and below it. The tail, as in *fuscus*, is only about two-thirds the length of the head and body, but, unlike that species, the tip of the tail is black, the hind foot is naked below to the heel at all seasons and the contour hairs are long and coarse, 70-80 mm. on the rump, and variegated with from 5-10 coloured bands, usually a combination of whitish, black and chestnut red, the red especially prevalent and extensive on the tips of the dorsal contour hairs but very variable in its incidence and extent. The muzzle is typically blackish, the head black but grizzled; the chin and throat dusky and grizzled; the belly brownish or reddish, sometimes with grizzly speckling; the legs are mostly blackish and the wool of the back may be olivaceous grey throughout or yellow at the summit and black at the base.

The skull is considerably larger and altogether more robust, with deeper zygomatic arches, than that of the foregoing species; but the occipital and sagittal crests are less well developed so that the dorsal profile is more depressed and convexly curved behind. The greatest difference, however, lies in the large size, more conical shape and lower inferior projection of the posterior chamber of the bulla, a modification which results in the occipital condyles, the hamulars and the upper carnassial teeth being raised higher above a horizontal surface, when the skull rests upon it. A peculiarity of the teeth, which are more robust and less trenchant, is the presence of a distinct cingulum on the inner lobe of the first upper molar ( $m^1$ ). There is also a trace of it on  $m^2$ .

This species is the type and sole representative of Gray's genus *Taeniogale* [*Proc. Zool. Soc.* (1864), p. 569].

The following account of some of the skins in the British Museum shows the colour-variations of this species:—

Travancore, Kolum. The *type* is reddish above from the nape backwards: on the fore body the hairs are extensively red at the tip, speckled brown

<sup>1</sup> As pointed out above (p. 226) this name was wrongly assigned to the synonymy of *smithii* by Blanford following Kelaart, but correctly relegated to *vitticollis* by Thomas. Wagner described the neck as having a black spot on each side. In some skins the black stripe is reduced to a large spot when its two ends are concealed by the overlapping pale hairs above and below.

and whitish below, but on the rump they are mostly red throughout with pale but no dark banding. Another from Travancore (Fry, No. 86.9.6.1), in good coat and colour, is, like the last, red from the nape to the black tail-tip but not so extensively, the hairs below being banded black and yellowish.

Palni Hills, Shambaganur, 6,000 ft. An ad. ♂, February 19, differs a little from Fry's Travancore specimen. It is red from the nape to the end of the tail, except for the tip, but there is not nearly so much red and the black and white speckling is everywhere more apparent.

S. Coorg, Wottekolle, 2,000 ft., January 2 and 5. An ad. ♂ and ♀ vary considerably. The ♂ has the fore back speckled yellow and black, not red as in the preceding specimens, but the hind back, rump, flanks and tail are extensively red and the fur of the back is yellow at the summit, black at the base. The ♀ is mostly dark grey above, the hairs banded black and white, not yellow, with buffish tips, but there is some red on the hair tips of the rump, thighs and tail; the flanks are grizzled, not nearly all red as in the ♂, and the fur is olive grey. The differences between these two skins, collected by Shortridge in the same place and at the same time of the year, are instructive. Another specimen from S. Coorg, an ad. ♂ from Srimangala, February 13, is intermediate in colour between the two from Wottekolle.

N. Kanara, Chipgeri, December 23, a ♂ is very like the ♀ from Wottekolle, the red setting in only on the rump.

Nilgiri Hills. A series of skins attests considerable variation. One is very like the ♂ from Wottekolle, another is practically all grey above, turning to yellowish on the rump, the others are intermediate between these two.

All the dated Indian skins, above described, as well as two from Haleri in N. Coorg, which are average in colouration, were collected between December and February. The differences in colouration are clearly not seasonal. On the other hand a series of five from Ceylon, namely three from Mousakanda, 3,000-3,400 ft., January 4 and October 8 (Phillips); one from Gammaduwa, 3,000 ft., August 8 (Phillips), and one from N. Eliya, May (Holdsworth), although extending over ten months of the year, are more uniformly coloured than the Indian set, having the hairs red at the tip from the head to the black tail-tip. It is worth noting that in the August skin from Gammaduwa the contour hairs are 80 mm., whereas in the January skins from S. Coorg they are barely 70 mm.

These Ceylon skins seem to bear out Blanford's idea that specimens from that island are on the average redder than those from S. India. There is no record, so far as I know, of skins from Ceylon showing hardly any red, like those from the Nilgiri Hills and N. Kanara. But none of the Ceylon skins is quite so red as the type of *vitticollis* from Travancore and they are not distinguishable from Fry's example from that district. Moreover the difference in 'redness' between the two skins from Wottekolle, S. Coorg, shows that colour-feature to be too variable to be relied on.

Some flesh measurements and weights are as follows:—

—		Head & Body	Tail	Hind-foot	Weight lbs.
South Coorg	... ad. ♂	20 $\frac{4}{8}$	13 $\frac{1}{2}$	4+	7 $\frac{1}{2}$
"	... ad. ♂	20 $\frac{4}{8}$	12 $\frac{3}{8}$	4+	6 $\frac{1}{2}$
Ceylon (Mousakanda)	... ad. ♂	20 $\frac{3}{8}$	11 $\frac{2}{8}$	3 $\frac{2}{8}$	5 $\frac{3}{4}$
"	... ad. ♂	20	12 $\frac{3}{8}$	3 $\frac{3}{8}$	6 $\frac{3}{4}$
South Coorg	... ad. ♀	19 $\frac{1}{2}$	12 $\frac{4}{8}$	3 $\frac{3}{8}$	6
North Coorg	... ad. ♀	20	10	3 $\frac{3}{8}$	...
"	... ad. ♀	17	12	3 $\frac{3}{8}$	...
Ceylon	... ad. ♀	19	12 $\frac{1}{2}$	3 $\frac{4}{8}$	3 $\frac{3}{4}$
" (aver. of 2)	... ad. ♀	18 $\frac{2}{3}$	12—	3 $\frac{1}{2}$	...

On this list the measurements of the ♀ Ceylonese specimens are taken from Phillips's volume. The largest ♂ he recorded had a head and body length of 20 in. and the average of 4 ♂ was 19 in.; but there are two ad.

♂ skins in the Museum sent by him from Gammaduwa and Mousakanda both of which measure  $20\frac{3}{4}$  in. in length of head and body. The dimensions exceed those of the previously described species, apart from some specimens of *H. edwardsii ferrugineus* from Kangra and Chamba, which are probably exaggerated. The weights also indicate a much more robust species as might be expected from the size of the skull, of which the dimensions are given below (p. 239).

### *Herpestes urva*, Hodgson.

*Gulo urva*, Hodgson, *Journ., As. Soc. Beng.*, v, p. 238 (1836).

*Urva cancrivora*, Hodgson, *Journ., As. Soc. Beng.*, vi, pp. 561-4.

*Mesobema cancrivora*, Hodgson, *Journ., As. Soc. Beng.*, x, p. 910.

*Herpestes urva*, Anderson, *Zool. Res. Yunnan*, p. 189, pl. 9, figs. 5 and 6 (1878); Blandford, *Mamm. Brit. Ind.*, p. 129 (1888); and subsequent authors including G. M. Allen, *Amer. Mus. Novit.*, No. 359, p. 8 (1929).

*Urva hanensis*, Matschie in Filchner's *Exp. China-Tibet*, p. 190 (1907).

*Herpestes urva annamensis*, *formosanus* and *sinensis*, Bechthold, *Zeitschr. Säug.*, xi, pp. 150-2 (1936).

*Locality of type* of *urva* and *cancrivora*, Nepal; of *hanensis*, Hankow; of *annamensis*, Phu Qui, Annam; of *formosanus*, Formosa; of *sinensis*, Kuangtung.

*Distribution*: Nepal, Assam and Burma to S. China including Formosa and Hainan, Laos, Tonkin, Annam and the northern part of the Malay Peninsula.

A large Mongoose with a comparatively short tail, not more than two-thirds the length of the head and body, a stripe of white contour hairs extending from the corner of the mouth to the shoulder and the sole of the hind foot hairy nearly down to the hallux. General colour above black and white, the contour hairs white at the tip to a varying extent, when extensive giving a 'badger-like' appearance to the pelage, the subterminal band extensively black, the under hair ochreous or rusty, dark grey close to the skin; tail with its base like the back but becoming progressively ochreous or flavous towards the tip; head blackish or brown, speckled, contrasted with the brown muzzle; belly brown, speckled, some black on the chest and hind throat, but fore throat, chin and lower cheek white; legs black with very little speckling.

Skull much more robust than in *edwardsii*, *smithii*, and *fuscus*, its dorsal profile very like that of *vitticollis*, the occipital and sagittal crests being weak so that it is sloped posteriorly, but the bullae and teeth, although the teeth are a little larger, much as in the three first mentioned species.

In addition to *Urva* and *Mesobema*, quoted above, a third generic name *Osmetectis* Gray [*Ann. Mag. Nat. Hist.*, x, p. 260 (1842)] was assigned to this Mongoose by Anderson in 1879 and, following him, by Thomas in 1882. The reference is unintelligible. Gray proposed *Osmetectis* for an animal he had previously named *Viverra fusca* [*Hardw. Illustr. Ind. Zool.*, i, pl. 5 (1830)]. The figure most emphatically does not represent a Mongoose of any kind. It has an elongated snout and cat-like feet and was possibly taken from a skin of the Nepalese Palm Civet (*Paguma larvata grayi*); but at best it is a caricature.

The following notes on skins in the British Museum are added to show the individual variation, seasonal and otherwise, and to justify the synonymy given above:—

Nepal. Four of Hodgson's specimens show great variation in colour. One is well coloured, the contour hairs 58 mm., being black and whitish, the plentiful wool bright buff, or ochreous at the summit, dull brown at the base; the hairs of the ventral surface are brown turning to grey at the base; the legs blackish with a little pale speckling above the paws; the tail like the back at the base but more and more ochreous towards the tip, but the hairs are short and broken here and may have been grey-tipped. A second, marked cotype, is a moulting skin in dead coat, with the wool quite pale yellowish white at the summit and the tail not nearly so ochreous. A third, also a cotype, is like the last but has the legs chocolate and the dark bands of the contour hairs deep brown, not so black. The last offers the greatest contrast



to the first, there being no yellow in the contour hairs or in the wool which is sooty grey; the hairs of the tail are yellowish grey at the base, then black with a grey tip.

Of two from Gorkha, Nepal (Baptista), one, November 26, agrees closely with Hodgson's first; the other, December 20, has the white tips of the contour hairs more extensive and the wool not quite so rich. Another from Nepal (Inglis) is duller in its wool, like Hodgson's cotypes.

Darjiling. A skin from Pashok (Crump), 3,000 ft., October 6, is like the Gorkha skin of December 20. One from Hasimara, Bhutan Duars, 600 ft., February 23, closely matches Hodgson's richly coloured skin; but one from Rajapara, S. Kamrup, 600 ft., November 17, has very little bright tint, except on the tail-tip, and fits in with Hodgson's duller skins. So also does one from Tura in the Garo Hills, 1,300 ft., the date being uncertain.

An undated skin from Sadya, N.-E. Assam, has a full long coat, about 70 mm., and has the rich ochreous under colour of the Darjiling skin, but the tips of the contours are more extensively white.

Burma. An undated skin from north of Mogaung, near the source of the Chindwin River (Capt. Abbey), is well coloured like the skin from Sadya, but has the under colour darker almost rusty ochreous, a yellow wash on the tips of the contour hairs of the back and the hairs of the tail mainly ochreous. One from the Chin Hills, November 13 (Hopwood) is very different from the last, being dull coloured with the wool drabby and the white tips of the contours small. One from 20 miles north-west of Kindat, 600 ft. (Mackenzie), April 19, is apparently moulting, there being no wool on the back but abundance on the flanks and purplish grey in colour. An ad. ♂ from Thandaung, near Toungoo, 4,500 ft., April 7, is very like the skin from Sadya, with a similar faint yellow wash and almost ferruginous-tipped wool. This skin also resembles the brightest of the Nepal series; but one from Tharawaddy agrees very well in colour with the duller Nepalese skins, although the coat has only a little greyish wool. Finally a skin from Rangoon, March 7, has the contour hairs black and white and 70 mm. long and the wool rather dull, greyish buff.

The above described skins ranging from Nepal to S. Burma in British Indian territory are broadly speaking so much alike and show so many cross resemblances in localities remote from each other that it is impossible to sort them into local races. The same applies to all the other skins in the British Museum from adjoining countries outside those limits. One from Xien Quang Koo, Laos, January 10; five from Backan Tonkin, 500 ft., December 17 to January 11; one from Phu Qui, Annam, 100 ft., the type of *annamensis*. Bechth., all collected by Delacour and Lowe and correctly, in my opinion, identified by Thomas and Osgood [*Field. Mus. N. H. Zool.*, xviii, p. 260 (1912)] as typical *urva*, are in well coloured winter coat and are inseparable from N. Indian and Burmese skins. Also the following Chinese skins, one undated from Tengyueh, Yunnan (Howell); and one from Foochow, March; one from Fokien, January 7; one from Chung Yang, S. Hupeh, January; one from Chinteh, Anhwei (Nyanhwei), May; and three from Bankoro, Formosa, fit in with the Indo-Chinese, Burmese and Indian skins. The Chinese skins have a bearing on the synonymy I have given of *H. urva*. Hankow, the type locality of *hanensis*, Matschie, lies between Hupeh and Anhwei and the likeness between my skins from these two districts and Indian and Burmese skins of typical *urva* confirms G. M. Allen's opinion that the alleged distinctive characters of *hanensis* have no systematic value. My two skins from Fokien, whence Allen had a good series, also support this view that the Crab-eating Mongoose of that district is inseparable from typical *urva*; and the agreement between the Fokien and Tonkin skins hardly admits of a doubt that the Kuangtung skins, described by Bechthold as *sinensis*, represent the same Mongoose. Three skins from Formosa in the British Museum I am unable to distinguish by any reliable character from Hodgson's Nepalese series. The alleged difference in the coat on which Bechthold relied when describing *formosanus* is probably seasonal, if existent. At all events in immature specimens from Formosa the contour hairs of the rump are 65 mm., whereas in two adult Nepalese specimens in good coat they are respectively 62 and 72 mm.

Very few flesh measurements of ad. ♂ specimens are available in the Museum material and none from the typical locality of *H. urva*. To the



measurements of British Indian specimens have been added a few recorded by Delacour and Lowe from Indo-China.

—		Head and Body	Tail	Hind foot
Backan, Tonkin	... ad. ♂	22	12 $\frac{1}{2}$	4 -
Toungoo, Burma	... ad. ♂	20 $\frac{1}{2}$	13 $\frac{1}{2}$	4 +
Gorkha, Nepal	... ad. ♀	20 $\frac{1}{2}$	12 $\frac{1}{2}$	4 +
"	... ad. ♀	18 $\frac{1}{2}$	12 $\frac{1}{2}$	4 -
"	... ad. ♀	19 $\frac{1}{2}$	12 $\frac{1}{2}$	4 +
Toungoo, Burma	... ad. ♀	19 $\frac{1}{2}$	12 $\frac{1}{2}$	4 +
Backan, Tonkin	... ad. ♀	20 $\frac{1}{2}$	12 $\frac{1}{2}$	4 -
Phu Qui, Annam	... ad. ♀	18 $\frac{1}{2}$	11 $\frac{1}{2}$	3 $\frac{1}{2}$

There is very little difference between the sexes. It may be noted that the two ♀ specimens from Nepal agree respectively very closely with the two from Indo-China. Of the latter the one from Annam is the type of *annamensis*, Becht.

The weight of one of Mackenzie's Tonghoo specimens, a ♀ with the head and body 18 in., was 4 $\frac{1}{2}$  lb. The weight of an ad. ♂ would no doubt be at least 6 lb. or over.

SKULL MEASUREMENTS OF *H. fuscus*, *H. vitticollis* and *H. urva*.

NAME, LOCALITY AND SEX	Cond. Bas.	Length	Zygom. Width	Post. Orb. Width	Int. Orb. Width	Max. Width	Mand. Length	$pm^4$	$m_1$
Madura, Highway Mt.	ad. ♂	89	48	16	18	18	61	9 × 6	8
S. Coorg, Virajpet	ad. ♂	88	47	15	18	17	59	8 × 6	7
Palni Hills,									
Tiger Shola	ad. ♂	83	44	15	—	16	55	8 × 5 $\frac{1}{2}$	8—
<i>H. fuscus rubidior</i>									
Anasigalla (type)	ad. ♂	83	43	13	16	15+	54	7 × 5	7
<i>H. fuscus flavidens</i>									
Kandy	yg. ad. ♂	79	42	13	15	15	53	7 $\frac{1}{2}$ × 5 $\frac{1}{2}$	7
Mousakanda	yg. ad. ♂	75	38	14	14	15	50	7 $\frac{1}{2}$ × 5	7
Kumbukkan	ad. ♀	75	40	13	15	13 $\frac{1}{2}$	48	7 × 5	6
<i>H. fuscus maccarthiae</i>									
Jaffna (type)	ad. ♀	71	37	13	14	13	—	7 $\frac{1}{2}$ × 5	—
<i>H. vitticollis</i>									
S. Coorg, Wottekolle	ad. ♂	103	58	19	22	22	72	10 × 7 $\frac{1}{2}$	9+
N. Coorg, Haleri	ad. ♀	98	54	20	21	21	70	9 $\frac{1}{2}$ × 8	9 $\frac{1}{2}$
Ceylon, Gammaduwa	ad. ♂	100	57	19	23	21	71	10 × 7	9
<i>H. urva</i>									
Burma, Ruby mines	ad. ♂	98	56	17 $\frac{1}{2}$	20	20	67	9 × 6 $\frac{1}{2}$	9+
"	Toungoo	ad.	97	56	15	21	69	9 × 7	9—
Nepal, Gorkha	ad. ♀	95	54	13 $\frac{1}{2}$	18	19	65	9 × 6 $\frac{1}{2}$	9—
"	"	ad. ♀	90	52 $\frac{1}{2}$	15	20	19	9 × 7	9

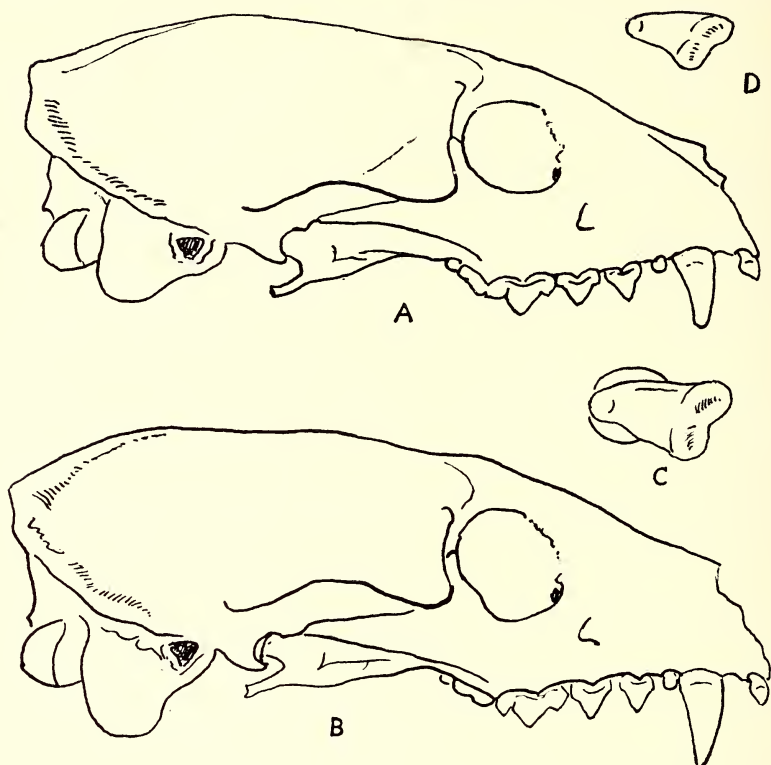


Fig. 2.—A. Skull of adult ♂ of *Herpestes urva* from the Ruby Mines, Burma.  
 B. Skull of adult ♂ of *Herpestes vitticollis* from S. Coorg.  
 C. First upper molar of left side of *Herpestes vitticollis*.  
 D. The same of *Herpestes edwardsii nyula*.

***Herpestes javanicus*, Geoffroy.**

*Ichneumon javanicus*, Geoffroy, *Descr. de l'Egypte. Hist. Nat.*, ii, p. 138 (1812).

*Distribution*: From Persia, through Northern India and Burma to Indo-China, Hainan, Siam, the Malay Peninsula and Java.

In the British Indian representatives of this species the size is small, with the tail always shorter than the head and body but usually over two-thirds the length; the coat is always short and soft to silky, when fresh, and although the general colour is variable seasonally and individually, the speckling is always fine, the contour hairs having as a rule only five rings of which two are pale; the under wool is characteristically yellow at the summit and black at the base and the legs are about the same tint as the body with the paws often paler.

In its general shape the skull is like that of *H. edwardsii* without the bulging forehead and the posterior chamber of the bulla is less inflated and scarcely projects below the anterior,

Although there is a great difference not only in size but in colour between the western race of this species, *pallipes*, and the eastern race, *javanicus*, the two are linked by intermediate forms, the Burmese race *birmanicus* coming very close to the Malayan race, *perakensis*, which connects it with the Siamese and Indo-Chinese race, *exilis*, the latter being similarly closely related to the typical Javan race *javanicus*, the largest of all, very nearly as large as *H. edwardsii*. The Indian and Burmese races differ from those found to the east and south-east of Burma in Continental Asia by being a little smaller, by having the crown of the head the same or almost the same tint as the body and by the complete absence of red in the pelage. In the others the head is at least darker, is nearly always some shade of red and redness is a very prevalent feature on the body and tail.

### *Herpestes javanicus auropunctatus*, Hodgs.

*Mangusta auropunctata*, Hodgson, *Journ., As. Soc. Beng.*, v, p. 235 (1836).

*Herpestes nepalensis*, Gray, *Charlesw. Mag. Nat. Hist.*, i, p. 578 (1837).

*Herpestes auropunctatus*, Blanford, *Mamm. Brit. Ind.*, p. 121 (1888), (in part, excluding *pallipes* and *persicus*).

*Mungos auropunctatus auropunctatus* and *H. nepalensis*, Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxvi, pp. 54-5 (1918).

*Locality of type of auropunctatus*, Nepal; of *nepalensis*, 'N. India' (Hodgson).

*Distribution*: N. India from Kashmir to Bhutan; Assam, Manipur and Bengal, south of the Ganges as far south as Chilka in Orissa.

Distinguished from the previously described British Indian Mongooses by its smaller size and shorter coat, the contour hairs in winter being at most up to about 20 mm. long, very soft and speckled with about five alternating bands; also by the legs being about the same tint as the body with the paws often a little paler than the areas above them, at all events not darker. The general colour varies considerably according to the season, but the speckling of the contour hairs is always fine, although more extensive when the coat is longer; the wool when fully grown is fairly abundant, dark at the base, pale at the summit and the tip of the tail does not differ conspicuously from the rest of the organ.

These characters apply in general to the other two British Indian races of *javanicus* in which, as in *auropunctatus*, the tail is considerably shorter than the head and body.

The following account of some skins in the British Museum attests great individual variation in colour.

Nepal. Eight undated skins (Hodgson), vary greatly in length of coat, amount of under wool and colour, the differences being no doubt seasonal. No two skins are exactly alike, the greatest contrast being between one (No. 43.1.12.124) in which the general tint is dark brown, with minute, nearly ochreous speckling, the contour hairs being short, the scanty wool brownish, and another (No. 43.1.12.20) which is comparatively pale, the pale speckling of the contour hairs being much more extensive and buffy grey to whitish and the more luxuriant wool greyish yellow at the summit, dark grey at the base. The first no doubt represents the new summer coat, the second the bleached winter coat. Another phase is shown by a skin (No. 45.1.8.321) which is pale brown, with fine grey speckling. The best coated of the series (No. 43.1.12.22) has the contour hairs about 20 mm., boldly speckled buffy yellow and blackish, with the wool ochreous at the summit, blackish brown at the base; the tail greyer than the body, the legs like the body, with the paws a little paler and unspeckled, the under side drabby, the hairs of the abdomen being browner at the base and showing some dark speckling. This skin exhibits, I believe, the unfaded winter coat. The rest of the skins differ in various details, linking those above described; and the type of *nepalensis*, Gray, also one of Hodgson's skins, regarded by Wroughton as representing a distinct 'species', fits in with the shorter coated, more finely speckled examples.

Of Nepalese skins from precise localities, one from Khatmandu (Scully), March, closely resembles Hodgson's (43.1.12.22) several from Gorkha (Baptista), November 30 to March 21, and two from Yodaveri, 7,000 ft. (Kennion), November 16, agree essentially with Hodgson's series, Kennion's skins being comparatively short coated and finely speckled.

Kashmir. Five skins resemble the Nepalese and show similar variations. One (Ward) without special locality, 6,300 ft., September 13, has the coat 13 mm., with very little, nearly uniformly dark grey under wool. One from Tral, 5,800 ft. (Stockley), October 7, has the coat 16 mm. Two from Kajer-skote, 5,500 ft. (Ward), January 12 and 22, have the coat 20 mm., and in other respects resemble the March skin from Khatmandu and Hodgson's (43.1.12.22), and one from Manarsbal, Wular Lake (Dunn), May 31, has the coat short, 14 mm. and the pale speckling of the contour hairs greyish.

From countries to the east of Nepal there are skins from Hasimara in Bhutan Duars, 600 ft. (Baptista), November 18 to February 28, which generally agree with the Nepal series, one skin being much darker than the others; one from Cooch Behar, March, is speckled silvery and black, a little paler than Hodgson's palest but obviously the same; five from Angarakata in N. Kamrup, Assam, 300 ft., December 23 to February 28, are like the specimens from Bhutan and Gorkha in Nepal; two from Golaghat, Assam, 250-300 ft., January 13 and 26, have the pale speckling yellowish white to white, one, the whiter of the two, which closely matches the Cooch Behar skin, has some almost wholly white hairs on the nape and fore back, giving these areas a hoary aspect; one, undated, from Dilkoosha in Cachar, almost exactly matches the skins from Gorkha in Nepal; whereas one from the Jaintia Hills, 3,000 ft., July 26, with the coat very short, finely speckled with buff and the wool uniformly dark, is like the skins from Yodaveri in Nepal. Finally a skin from Manipur (Hume), March 11, identified by Blanford as *birmanicus*, has the coat full, 20 mm. long, and only differs from the example of typical *auropunctatus* from Khatmandu, also collected in March, in having the pale speckling a trifle yellower, less ochreous.

There are three skins from localities south of the Ganges in N.-E. India. A ♂ from Midnapore, 200 ft., September 11, has the coat thin and short, the general colour darkish, with very fine yellowish or buff speckling, the wool very scanty and mostly grey, the two normal tints being merely slightly indicated. A ♀ from Nimiaghat, Hazaribagh, 1,000 ft., June 12, is as finely speckled as the Midnapore skin, the coat being equally thin and short, but the general colour is paler and yellower, the pale speckling being richer in hue and the dark speckling browner, not so black. The third, a ♀ from Satpara Puridish in Orissa (Chilka Survey), is undated but is in good coat and in its whitish pale speckling and in the tint of its well developed under fur it closely matches Hodgson's pale speckled Nepalese skins. The well marked differences between these three skins are probably merely seasonal and there is no evidence that they are either separately or collectively racially distinct from *auropunctatus*.

This race under the name *nepalensis* is the type of the genus *Calogale* Gray [*Proc. Zool. Soc.* (1864), p. 560].

It was this small Mongoose, not *H. edwardsii* as formerly supposed, that was introduced into the West Indies, and is now found in most of the islands, the British Museum having specimens from Jamaica, St. Lucia, Barbados and elsewhere. This was pointed out by G. M. Allen [*Bull. Mus. Comp. Zool.*, liv, p. 217 (1911)] who identified his specimens as *Herpestes birmanicus* and told the story of the shipment of the original consignment from Calcutta to Jamaica.

#### *Herpestes javanicus pallipes*, Blyth.

*Mangusta pallipes*, Blyth, *Journ., As. Soc. Beng.*, xiv, p. 346 (1845) and xv, p. 169 (1846).

*Herpestes persicus*, Gray, *Proc. Zool. Soc.* (1864), p. 554.

*Herpestes auropunctatus*, Blanford, *Mamm. Brit. Ind.*, p. 121 (1888), (in part).



*Mungos auropunctatus helvus*, Ryley, *Journ., Bomb. Nat. Hist. Soc.*, xxii, p. 661 (1914).

*Mungos auropunctatus pallipes* and *helvus*, Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxvi, pp. 54-5 (1918).

*Locality of the type* of *pallipes*, Kandahar; of *persicus*, Khuzistan and Mohammerah, W. Persia; of *helvus*, Deesa in Palanpur, N. Gujerat.

*Distribution*: The deserts of N.-W. India; Afghanistan; Persia.

Distinguished from the average from *auropunctatus* by its paler, generally greyer colour above and usually whiter colour below.

The following account of some of the skins in the British Museum affords justification for the synonymy given above:—

Afghanistan. Three skins from Kandahar, topotypes of *pallipes* Blyth, collected by Hutton and St. John, and one labelled Afghanistan collected by Griffiths and also probably a topotype, vary considerably in colour. Griffiths' skin is darkish, olivaceous, speckled brownish black and buffy, with normally tinted wool and the coat 17 mm. Of the three skins from Kandahar, two have the coat the same length and the wool the same colour as in Griffiths's skin, but the general colouration is much lighter, owing to the whitish speckling, the speckling being broader in one than the other. This specimen, dated February 2, shows that the others, with similar coat and wool, are winter skins, but Hutton's Kandahar skin, with the coat only 10 mm., and indifferently speckled, the wool very short and yellowish olive showing between the thinned contour hairs, is obviously moulting.

A skin from Seistan on the Perso-Afghan border (Kennion) is almost an exact match of St. John's Kandahar skins; the co-types of *persicus* from Khuzistan and Mohammerah, near the head of the Persian Gulf, similarly resemble Griffiths's Afghan skin and two from Mesopotamia are respectively like Griffiths's and one of St. John's Kandahar skins. These data show that *persicus* is a synonym of *pallipes* as Blanford maintained. Wroughton gave no reasons for his opinion that *persicus* is distinct.

A very large number of skins collected from the deserts of N.-W. India, principally in Sind by Prater and McCann for the Survey, was correctly identified as *pallipes* by Wroughton and others. Of these a series from Tatta, Gharo, Keti, Bagan on the Indus, Bohara near Karachi, is dark and brownish grey in hue, although varying individually; several from Gambat in Khairpur, April 6 to 10, are darkish grey or paler like the Afghan skins. Of four skins from Larkhana, one, March 22, is grey and matches St. John's Kandahar skins; the others, May 9, are dark skins in bad coat like the brownish skins from the Karachi district; and one from Jacobabad, February 27, is like the two pale Kandahar skins and the one from Seistan, and the same applies to a skin from the Salt Range in the Upper Punjab, March 12. Finally seven more or less faded skins, collected by Crump at Deesa, Palanpur, 450 ft., April 25 to May 5, were described by Ryley as *helvus*. This race was adopted by Wroughton; but three at least of the better coloured skins almost exactly match the skin from Seistan and may be described as slightly faded editions of St. John's topotypes of *pallipes*. The type of *helvus*, May 5, has the dark speckling still more faded and the partial exposure of the wool by the thinning of the contour hairs helps to give the yellowish appearance upon which the race was based. Another has the moult of the contour hairs still further advanced and is yellower than the type. The evidence that *helvus* is a valid race is in my opinion negligible.

Some skins from Gwalior (Riley O'Brien) agree on the whole better with this race than with *auropunctatus*.

#### ***Herpestes javanicus birmanicus*, Thomas.**

*Herpestes birmanicus*, Thomas, *Ann. Mag. Nat. Hist.* (5), xvii, p. 84 (1886) and *Proc. Zool. Soc.* (1886), p. 58; Blanford, *Mamm. Brit. Ind.*, p. 122 (1888); Wroughton, *Journ., Bomb. Nat. Hist. Soc.*, xxvi, pp. 54-5 (1918).

Locality of the type: Pegu.

Distribution: Lower Burma from Toungoo to Tenasserim.

Distinguished from *auropunctatus* of Northern India and Assam by its slightly larger average size indicated particularly by the skull.

Although regarded as a distinct species by Thomas, Blanford and Wroughton, this Mongoose is clearly nothing but a local race akin to the typical North Indian form *auropunctatus*, with which it completely intergrades. Blanford indeed recorded it from Manipur and Cachar, but for what reason is not clear. The only skin from Cachar I have seen is inseparable from Nepalese specimens, although it exactly matches in colour the type of *birmanicus* from Pegu (Oates), April 10.

A series of nine skins from Toungoo, 100 ft. (J. M. D. MacKenzie), May 23 to August 16, shows considerable variation in colour, some closely agreeing with the type. Most of them, dating from May 26 to June 13, have short coats, are dark brown in colour, with fine pale ochreous speckling, the wool scanty and not noticeably bicolor and closely resemble the skins of *auropunctatus* from Yodaveri in Nepal; but one, May 23, is much lighter, with less black and paler yellowish speckling almost exactly as in typical *nepalensis*, and another, August 16, is lighter than the last, has a longer coat and consequently more extensive pale speckling, which is also rather brighter yellow, and the wool is beginning to be differentiated into the two normal tints. Finally one from the Sittang delta, 40 miles south of Pegu, March 4, is yellower than any, with a longer coat and broader pale bands, normally bicolor wool, in all respects nearly matching the better coloured of Hodgson's Nepalese series.

Flesh measurements in English inches of some specimens of the three races of this species are as follows:—

—			Head and Body	Tail	Hind foot
<i>auropunctatus</i>					
Bhutan Duars	...	ad. ♂	13 $\frac{1}{5}$	10 $\frac{1}{5}$	2 $\frac{2}{5}$
Kajetrsgkote, Kashmir	...	ad. ♂	12 $\frac{2}{5}$	10 $\frac{2}{5}$	2 $\frac{2}{5}$
Gorkha, Nepal	...	ad. ♂	12 $\frac{1}{5}$	9 $\frac{2}{5}$	2 $\frac{1}{5}$
Bhutan Duars	...	ad. ♀	11 $\frac{3}{5}$	9 $\frac{3}{5}$	2+
<i>pallipes</i>					
Larkhana, Sind	...	ad. ♂	12 $\frac{1}{5}$	9 $\frac{1}{5}$	1 $\frac{4}{5}$
Palanpur, Gujerat	...	ad. ♂	12+	10 $\frac{2}{5}$	2
"	...	ad. ♀	11 $\frac{1}{5}$	9 $\frac{1}{5}$	1 $\frac{4}{5}$
Larkhana, Sind	...	ad. ♀	10 $\frac{3}{5}$	8 $\frac{3}{5}$	1 $\frac{2}{5}$
<i>birmanicus</i>					
Toungoo	...	ad. ♂	14 $\frac{4}{5}$	11 $\frac{3}{5}$	2 $\frac{1}{5}$
"	...	ad. ♂	13 $\frac{2}{5}$	9	2 $\frac{1}{5}$
"	...	ad. ♀	12 $\frac{4}{5}$	10	2+

